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Driving the Nabob tunnel, Pine Creek district, Idaho, Stanley Sullivan gets out the muck — Page 80

That Labrador Iron Ore —Page 88

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Volume 149 **Number 11**

A McGRAW-HILL PUBLICATION

McGRAW-HILL PUBLISHING COMPANY, INC.

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Company Offices

Publication office: 210 S. Desplaines St., Chicago 6, Ill. Editorial and Executive Offices: 330 West 42nd St., New York 18, N. Y. Cable address: McGraw-Hill, New York, Branch Offices: San Francisco 4, 68 Post St.; Chicago 11, 520 N. Michigan Ave.; Los Angeles 14, Pacific Finance Bldg.; Washington, D. C., National Press Bldg.; Pittsburgh 22, 738-9 Oliver Bldg.; Detroit 26, 2980 Penobscot Bldg.; Cleveland 15, 1510 Hanna Bldg.; Boston 16, 1427 Statler Bldg.; Philadelphia 3, 17th & Sansom Sts.; Atlanta 3, 1011 Rhodes-Haverty Bldg.; St. Louis 8, Continental Bldg. District Managers: New York, T. E. Alcorn, F. W. Roets; Philadelphia, W. A. Potter; Cleveland, W. M. Spears; Pittsburgh, H. C. Chellson; Chicago, C. J. Coash and G. A. Mack; San Francisco, J. W. Otterson; Atlanta, R. C. Maultsby; Los Angeles, C. W. Dysinger. London address: McGraw-Hill Publishing Co., Ltd., Aldwych House, Aldwych, London, W.C. 2, England. Cable address: Backlash Estrand, London. Other McGraw-Hill foreign news offices in Paris, Berlin, Moscow, Prague, Shanghai, Bombay and Mexico City.

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Subscription Information

ENGINEERING AND MINING JOURNAL, November, 1948, Vol. 149, No. 11. Published monthly at Chicago, Ill. Return postage guaranteed. Subscription rates: United States and possessions $3 a year, $4 for 2 years, $5 for 3 years. Canada $4 a year, $6 for 2 years, $8 for 3 years. Pan American countries $5 a year, $8 for 2 years, $10 for 3 years. Elsewhere $15 a year, $25 for 2 years, $30 for 3 years. Please indicate position and company connection in all subscription orders. Price of this issue, 50 cents. Entered as second class matter August 16, 1948, at the post office at Chicago, Ill., under the Act of March 3, 1879.

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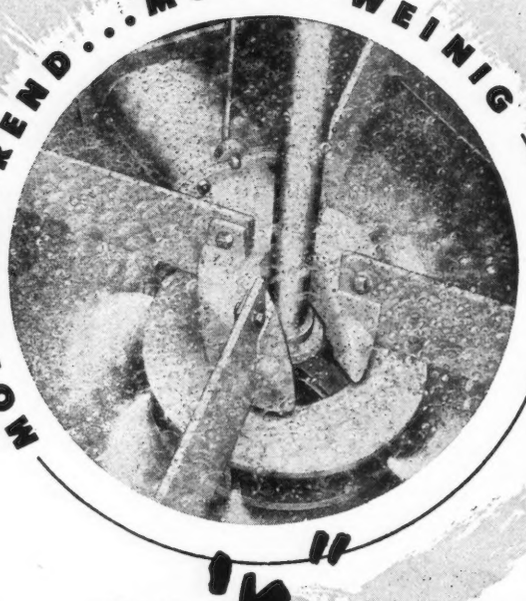

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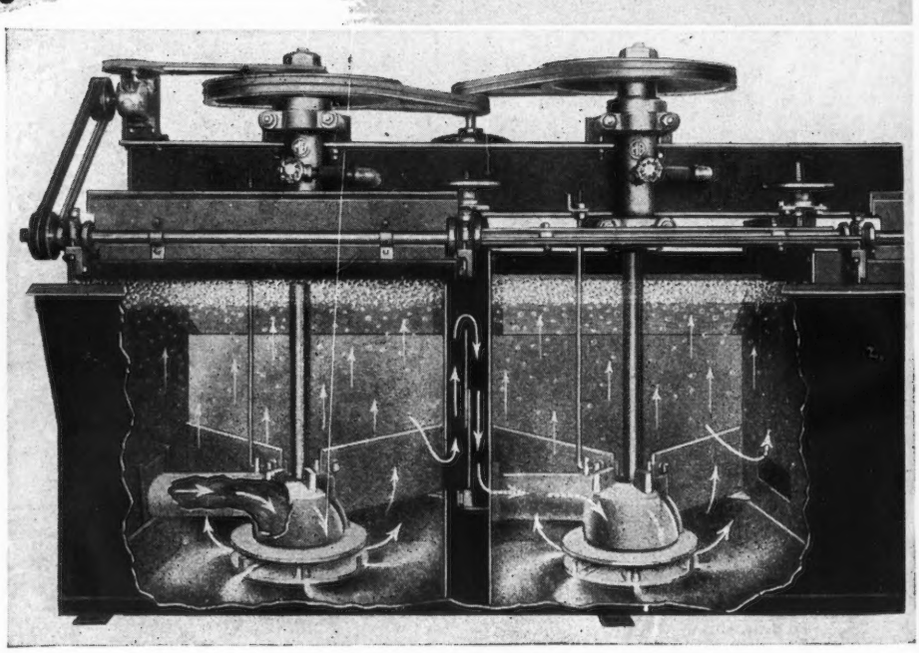

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ENGINEERING AND MINING JOURNAL

NOVEMBER, 1948

The New President and Mining

ALTHOUGH WE, as citizens and voters, have as violent opinions on political matters as anyone we know, we have always been careful to keep such views out of these pages. Our opinions on mining industry matters are stated as clearly and forcefully as we can put them, but politics, we believe, is not our show.

Yet we cannot avoid commenting that this year's presidential election seems unusually fraught with good or ill for the mining industry. As we write this editorial, Dewey is smiling confidently, Truman is calling names, and the election is still in the future. By the time you read this page, however, the election will be over. For all we know, Henry Wallace may then be president, and he may have appointed Vito Marcantonio as his Secretary of State.

The prospect of Mr. Wallace and his crimson-bannered crew entering the White House is simply too grotesque to discuss calmly. If it has happened, you may forego reading the rest of this.

If Mr. Truman is now our next president, we in the mining industry will be at least no worse off than we were before. We have lived through many strange and painful manifestations of Mr. Truman's form of government. We can live through many more.

But if, when you read this, Mr. Dewey is waiting impatiently for moving day at the White House, what then? What can the mining industry expect of the new Republican leadership?

If one may judge by his campaign speeches, Mr. Dewey is quite well informed on the special problems of the mining industry. At Denver, Salt Lake, Butte and elsewhere, he has shown an awareness of things like manpower problems, strategic materials, relationship between taxation and venture capital in mining, and the difference between a "have" and a truly "have-not" nation.

He will probably favor tax revision that will encourage new investment in mining. He has promised repeatedly to appoint a Secretary of the Interior from the West. He apparently believes in the West, as we do, as a storehouse of potential wealth as great as we have known before, a storehouse to which we have only to find the right key. He believes in "conserving" our natural resources by maintaining healthy domestic industries that can use them intelligently and in the national interest.

To an industry that has longed to see just such a man in the driver's seat, this election (still coming to us, but history to you) holds out great promise. We urge our readers, particularly those in the West, to do what they can to see that this promise is fulfilled.

For example, if Mr. Dewey is now president, let us join Mr. Warren, of California, in reminding him that the West doesn't begin until you get out beyond Nebraska, at least. Mr. Dewey may need a reminder in order to keep that pledge of picking a Westerner for the Interior secretaryship.

But however the election has turned out, and however many campaign promises may be kept or broken, we can be sure of this: The mining industry, and the Nation as a whole, face a grim and troubled future. More than ever, it will be necessary for men in industry and Government to stand together to plan their actions intelligently and carry them out with determination. We can only hope that the election has cleared a pathway to that goal.

Hang On to Your Miners

SIMPLY BECAUSE the metal mining industry worked a near miracle of production during the last war, one should have no right to expect the industry to perform the real miracle of mining without miners if a new emergency should arise.

Yet that seems to be what is expected of mining companies, if one may judge from the apparent lack of recognition in Government circles of what the draft and industrial mobilization might do to mining.

One has only to visit a few mines, East or West, to find that manpower is still the problem. Our editors have talked with many mining men in recent weeks, and the complaint of "not enough miners" was almost universal. Few people mentioned lack of ore, because development work is on the way to catching up in most mines. Many men talked about rising costs, or unfair taxes, or freight rates, or Communism; but on one point nearly all are agreed. "There are not enough un-

derground miners available to get the mine up to rated tonnage."

Estimates vary as to how many miners will be lost to the draft, if it is applied strictly. Ross Leisk, general manager of Sunshine Mining Co., in a recent talk estimated that the draft might take away 6% of his employees, men that Sunshine could ill afford to lose. The problem, of course, is how to keep them.

The buck, on deferment of miners, has apparently been passed on down to local draft boards. There is only one thing for a mining company to do, and that is to make the best case possible before its local draft board, to hang on to needed men. It should not be too difficult, considering the publicity given the Nation's need for metals and minerals, to convince board members who live in mining districts, that the Nation's interests are best served by keeping the miners in the mines.

Then, probably, the boys themselves will take some convincing. Not until we resort to actual force will we be able to make people work at a job they are anxious to leave. The lesson of the last war is that Government regulations alone can't do it. Men leave one place and go to work at another because they like the new place better or because they make more money there. Or they stay in one place for the same reasons. Only in an army, or under the heel of corps of secret police, have other reasons been substituted.

There seems no choice for the mining industry, then, but to fight its own battles in hanging on to the men it already has. And as Byron Grant pointed out in San Francisco at the Mining Congress, the industry can attract more and better men only by making the industry more attractive.

The Gold Pot Boils

SIGNS MULTIPLY that the gold pot is boiling, and quite a head of steam is building up under the lid that monetary agencies are trying to hold down. For example:

1. Some domestic gold producers are taking pains to recover gold in its natural state (unamalgamated, uncyanided), so that it can legally be sold to individuals for whatever they are willing to pay. One producer is selling about 5,000 oz. a month in this way for an average price of $41 per oz.

2. Early in October, U. S. Customs agents in New York found $135,150 in Mexican gold coins tucked neatly under the rear seat of a 1947 Chevrolet sedan about to be loaded into a ship bound for Antwerp. Nobody had ever heard of the shipper at the address he gave on the bill of lading. "We have been after this gang for months," said a Customs man. "They are ruining the Mexican currency situation."

3. In Chile, the Government issued a blanket permission to use Chilean gold to buy foreign goods for import. The resulting rush to convert paper to gold drove Chile's already inflated currency to new lows, and the Government changed its mind.

4. Southern Rhodesia yielded to International Monetary Fund protests last month and cancelled the subsidy she had been giving to gold producers. The Fund is strongly opposed to all gold subsidy plans.

5. John F. Snyder, Secretary of the U. S. Treasury, told reporters recently, "we are giving no consideration to an increase in the price of gold." This, despite a reported desire on the part of England to see the price of gold increased.

As to the sale of domestic gold in its natural state, this is certainly one way by which a gold producer can do something to offset rising costs. So far, the quantity sold must be small compared with the 200,000-oz. monthly total production for the United States. What would happen if larger quantities began to be sold at above the fixed price, no one can forecast with assurance; but it is a pretty safe bet that the Treasury, unless it completely reverses its past policy, will do what it can to plug this loophole in the law if too much gold begins flowing through it.

We still believe, as we said in these pages last March, that world-wide currency devaluation will eventually force a higher price for gold. But we can count on stubborn resistance to such a price increase from the International Monetary Fund and the U. S. Treasury. They have dedicated themselves to currency stabilization, and in their eyes, a gold price increase or a free market for gold would spread utter monetary chaos. One may dispute this view, but one cannot ignore its existence, or the power that can be exercised by the men who hold it.

Nevertheless, there is unmistakable pressure building up under the lid on which the Fund and the Treasury are perched. Despite the Fund's victory over the gold subsidy in Rhodesia, the call for Government aid to gold mining, in one form or another, will be heard insistently from all corners of the world, and the Fund's grip on the currencies of the world is none too secure.

We think, in short, that the sands are beginning to run out on the game of pegged currencies and world-wide monetary stabilization. When the last grain falls, it will be the Treasury's move.

Incentives for Marginal Mines

E. H. SNYDER
President, Combined Metals Reduction Co.
Salt Lake City, Utah

E. H. SNYDER

I CAN READILY understand why one may believe that every man in the mining industry has a different solution for the industry's problems, yet it is true that virtually the entire industry is agreed that there are insufficient incentives to create a favorable climate for venture capital in domestic mining.

Our best informed mining engineer made a casual survey in this connection during the past summer by asking the managers of several of the more profitable Rocky Mountain underground mines that, assuming they had their present geological knowledge of their respective orebodies but no development or plants, if it would be good business under present conditions to invest the capital that would be required to develop and equip the mines and build the necessary plants to operate them. The answers were generally *NO*, and the conversations in most cases were channeled to the subjects of the withering effects of taxes, and the high cost of equipment and construction.

With such a condition existing in connection with the more profitable mines, very little thought is required to understand the reasons for the cries for help from the small operators who are trying to make prospects into mines, or those of the owners of developed marginal deposits who read about the billions in gifts abroad, the metal famine, the grand plans of the State department to favor foreign mineral development, $188 million for destroying surplus potatoes, foreign metal sold in American markets at prices substantially in excess of the prices on which domestic ores are purchased, another round of wage increases, and also rumors that the faithful, highly rated character known as the Law of Supply and Demand was "locked out" and not on a vacation.

No matter whether you like this clamor or not, the boys making the noise appear to have plenty of ammunition with which to interest Congress and maybe sufficient to disturb the most orderly affairs in our industry. I sincerely recommend that in our own interests, and those of the Nation, we give the problems of the small operator, the development of new mines and the conservation of marginal domestic mineral resources the attention they deserve. As pointed out by Dr. Boyd, the patented remedies of the past, even if mixed with fresh licorice or peppermint won't do the job.

As these problems are many, they cannot be wrapped in one package and cured by a single Act of Congress. Conflicts between the economic interests of the various segments of the industry will continue to plague us, but we must not let these reduce the cooperation your association requires to solve the many problems on which there is no serious difference of opinion as to methods. For example, the drive for a major revision of the tax laws so that venture capital may have a living wage.

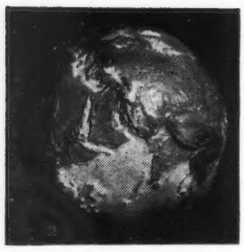
Many futile attempts, during the past three years, to get agreement in groups of mining men on the matter of metal subsidies cause me to avoid submitting a specific program at this time. However, I am convinced that a direct Government subsidy of some form will be required to restore and maintain ore reserves.

The facts that cause me to make this statement are bitter medicine for many in our industry who abhor the word subsidy, without realizing that the industrial strength of this Nation was built on tariffs, and that tariffs are subsidies paid indirectly to producers by consumers.

The reckless and capricious manner in which the State Department has ruined our domestic mercury industry, and seriously damaged our tungsten operations, has recently served as the final straw to convince some rugged individualists that the mass of handicaps placed on them during the past 16 years (many of which appear permanent), make direct subsidies the only logical means to perpetuate their industry. They should not be conscience-stricken in this connection, as the farmer, shipowner and airlines have long received subsidies to permit them to serve the Nation.

I hope that nothing I say here will cause anyone to think that I favor any form of subsidy that will guarantee profits to the producer of rock, that will handicap that portion of our industry which requires no help or that will destroy the efficiency of our free enterprise system.

[1]Condensed from Mr. Snyder's discussion of premium prices before the American Mining Congress, San Francisco, Sept. 21, 1948.



Communism struggles desperately in France today to stem ECA aid which the nation's planners hope to enlist in economic recovery. Accelerated domestic and colonial mineral production is vital to this program.*

FRANCE—DEPARTMENTS

1. Nord
2. Pas de Calais
3. Seine Inferieure
4. Somme
5. Aisne
6. Ardennes
7. Manche
8. Calvados
9. Eure
10. Oise
11. Marne
12. Meuse
13. Meurthe et Moselle
14. Moselle
15. Bas Rhin
16. Finistere
17. Cotes du Nord
18. Ille et Vilaine (Pb, Zn, Py)
19. Mayenne
20. Orne
21. Sarthe
22. Eure et Loir
23. Seine et Oise
24. Seine
25. Seine et Marne
26. Aube
27. Haute Marne
28. Vosges
29. Haut Rhin
30. Morbihan
31. Loire Inferieure
32. Maine et Loire
33. Indre et Loire
34. Loir et Cher
35. Loiret
36. Yonne
37. Cote d'Or
38. Haute Saone
39. Belfort
40. Vendee
41. Deux Sevres
42. Vienne
43. Indre
44. Cher
45. Nievre
46. Saone et Loire (Mn, Py)
47. Jura
48. Doubs
49. Charente Inferieure
50. Charente
51. Haute Vienne (Wo)
52. Creuse (Au)
53. Allier (Cu, Sn, Wo)
54. Puy de Dome (Fl)
55. Loire
56. Rhone (Py)
57. Ain
58. Haute Savoie
59. Gironde
60. Dordogne
61. Correze
62. Cantal (Sb, Wo)
63. Haute Loire (Sb, Fl)
64. Ardeche (Py)
71. Drome
66. Isere
67. Savoie (Pb, Co)
68. Landes
69. Lot et Garonne
70. Tarn et Garonne
71. Lot
72. Aveyron
73. Lozere (Sb)
74. Card (Pb, Zn, Py)
75. Vancluse (S)
76. Hautes Alpes
77. Bases Alpes
78. Alpes Maritimes
79. Gers
80. Haute Garonne
81. Tarn (Pb, Zn, Fl)
82. Herault (Pb)
83. Bouches du Rhones
84. Var
85. Basses Pyrenees (Py)
86. Hautes Pyrenees (Pb, Zn, Py)
87. Ariege (Pb, Zn)
88. Aude (Au, S)
89. Pyrenees Orientales

MINES IN PRODUCTION—1947 and first quarter 1948 (Numbers indicate departments)**

LEAD. La Touche (18); La Loubatiere (82); Pierrefitte (86); Orb (86); Les Malines (74); Peyrebrune (81); La Plagne (67); Sentein (87)

ZINC. La Touche (18); Pierrefitte (86); Orb (86); Les Malines (74); Peyrebrune (81); Sentein (87)

ANTIMONY. La Collet de Deze (73); Freycenet (63); Ouche (62)

COPPER AND TIN. Charrier (53)

MANGANESE. Saint Prix (46)

IRON PYRITE. Le Soulier (74); La Touche (18); Orb (86); Charmes & Soyons (64); Chizeuil (46); Sain Bel (56); Itxassou (85)

GOLD. Salsigne (88); Le Chatelet (52)

WOLFRAM. Leucamp (62); Les Montmins (53); Puy-les-Vignes (51)

SULPHUR. Malvezy (88); Saignon (75); Les Camoins (83)

FLUORSPAR. Langeac (63); Beix (54); St. Jean de Jeanne (81)

COBALT. Plombiere-St.-Marcel near Moutiers (67)

Mineral Position of ECA Nations

BOYD FRANCE
McGraw-Hill World News
Paris Bureau

4—FRANCE

IF FRANCE SUCCEEDS in thrashing out her present internal political difficulties satisfactorially, her economy lies on the threshold of a promising expansion program which will lean heavily upon development of colonial mineral resources, and to a lesser degree upon mechanization and modernization of metropolitan mines. The part that ECA will play in this program is now beginning to unfold. Beyond the temporary stimulus of ECA, it is hoped that private capital, for-

*Second of a series of timely articles on the mineral position of the ECA nations.

**From Map Prepared by U. S. Board of Economic Warfare, 1943. Symbols indicate departments from which production was obtained in 1947, and during the first quarter of 1948.

eign and domestic, will be attracted by the untouched wealth that still awaits exploitation in the French Colonies.

Labor

The total number of workers employed in the non-ferrous mining industry excluding potash was about 6,000 in August, 1948. As most of the important mines, totaling about 25, employ only a few hundred workers, labor problems are not as acute as in larger French industries. No new mining areas have been opened during the first quarter of 1948.

Miners in many cases own small farms or have other outside sources of income. Since the majority of these mines are located in rural areas there is no lack of food. Communists have made sporadic attempts to infiltrate into the non-ferrous mining industry, but haven't made much headway except of course in the coal mines. Communist class warfare doctrines don't go down very well with French non-ferrous miners, the majority of whom are both workers and property owners.

All non-ferrous mines except the coal mines and the potash mines in Alsace are privately owned. The bulk of the Alsatian potash mines were taken over by the Government after the first world war from their German owners. They are run by an autonomous Government corporation. There is no question for the moment of nationalizing any of the existing non-ferrous mines in France, although the Government may finance and control some of the new developments in the colonies.

Mechanization Needed

The French non-ferrous mining industry is far behind the U. S. in mechanization. It is trying desperately to catch up through importation of American mining machinery. The Association of Non-Ferrous Mines of France estimates that the industry needs a minimum of $4 million worth of U. S. mining equipment during the four-year life of the Marshall Plan to increase its output significantly over prewar levels.

A rough breakdown of this total follows: Two million dollars would be for development of a virtually untouched undersea magnesium deposit off Martigues on the Mediterranean near Marseilles.

Another $500,000 would go for underground mining equipment such as drills, power shovels, scrapers, pumps and locomotives. Mining companies so far have asked the Government to authorize purchases in the U. S. of a total of 20 medium-sized rocker shovels, 100 rock drills and a large shipment of carbide bits. Several drill jumbos, a dragline power shovel and a considerable number of bulldozers already have been delivered from the U. S.

But the demand is far from being filled. No French non-ferrous mines except the coal and potash mines are presently equipped with shaker conveyors or conveyor belts. There is an acute shortage of light drills. One-third of the locomotives now used in the industry are electric and the rest are diesel.

About $750,000 of the four million total would be spent for refining equipment and for flotation and separation processes; the remaining $750,000 would be for transportation and shop equipment.

The French non-ferrous mining industry has completely exhausted its dollar credits and is looking to the Marshall Plan to finance its development program. But so far it has not received final approval for this program either from the French Government, the OEEC or the ECA. One reason for the delays in getting its demand written into the Marshall Plan has been the difficulty of obtaining the necessary detailed information from the more than 50 private mining companies scattered throughout France.

ECA officials, however, are getting impatient to see a concrete program for development of non-ferrous mining since many of these ores are on the U. S. list of strategic materials. So there is a good chance that a concrete development program will be submitted for approval soon.

Antimony—In 1948 it is expected that the Ouche (Cantal) mine will produce about 1,000 tons of 40% concentrate, and results for the first quarter indicate that the target will be attained. Imports of ore from the French Colonies in 1947 were 6,000 tons, chiefly from Morocco, and for the first quarter of 1948, 130 tons.

Chrome—Requirements of chrome ore for 1948 are estimated at about 70,000 tons. In 1947, 23,000 tons of chrome ore, or slightly more than 50% of the total consumption were imported from New Caledonia. Imports of Caledonian ore in the first quarter of 1948 were 10,000 tons. The French would prefer to ship New Caledonian ore to the United States and receive their supplies from Turkey or Rhodesia, as transportation charges would be reduced thereby, but Rhodesian ore will not be available in any quantity until transportation is provided.

Cobalt—Production of cobalt in Morocco in 1948 is expected to reach 5,000 tons, of which 3,500 will be needed to produce the 300 tons of metal required by French industry. The balance can be exported.

Copper and Brass—The copper and brass situation is critical. Official

Mineral Production and Requirements
Metropolitan France

(In Metric Tons)

	Estimated Requirements 1948	Production in France 1947
Antimony ore	4,000	—
Antimony metal	2,500	—
Asbestos	18,000	475
Barite	—	50,275
Bismuth	175	—
Cadmium	325	43
Chrome ore	70,000	—
Cobalt ore	3,500	—
Cobalt metal	300	—
Copper ore	—	235[3]
Copper, raw	120,000[1]	13,599
Copper, blister	24,000[1]	—
Brass scrap	36,000[1]	—
Graphite, amorphous	1,000	—
Graphite, flake	4,000	—
Lead	110,000	41,600[5]
Lead, ore	—	11,151[4, 9]
Magnesium	—	800
Manganese ore	240,000	—
Mercury	300	—
Mica	250	—
Nickel	7,000	1,777
Gold (kilos)	—	1,034
Platinum (kilos)	450	—
Silver (m. t.)	150	53,114
Tin	12,000	—
Titanium (Ilmenite)	4,000	—
Tungsten & molybdenum ores	5,000[2]	—
Vanadium	200	—
Zinc metal	130,000	49,100
Zinc ore	—	11,969[6]
Fluorspar	—	25,834
Sulphur	—	197,340[8]
Iron ore	—	18,550,571[7]
Iron pyrite	—	196,180
Talc	—	70,000
Gypsum	—	585,000
Bauxite	—	677,372
Phosphate rock	—	56,786
Feldspar	—	54,657[9]

Dashes indicate not reported.
[1]French Bureau of Mines estimates—considered too low by the Metal Syndicate. [2]Tungsten ores, 60 to 65% WO_3. [3]30% copper. [4]60 to 65% lead. [5]First and second fusion. [6]50% zinc. [7]33% iron. [8]10% sulphur. [9]Includes production from Morocco.

France Depends Heavily on Colonial Imports

figures for 1947 show imports of 127,200 tons of raw copper, including blister, and 22,300 tons of brass scrap. Imports of raw copper have fallen to 18,700 tons in the first quarter of 1948, March imports being 6,300 tons. Stocks of about 31,000 tons were reported on March 31, 1948, representing a 10 weeks' supply.

The French Bureau of Mines, which controls the purchase of copper for the entire industry, exclusive of semi-manufactured products, estimates that for 1948, France will need 12,000 tons of raw copper per month, in which is included 2,000 tons of blister which must come from the Hoboken (Belgium) plant. It is estimated that at least 3,000 tons of brass scrap also will be needed monthly, which it is believed is available only in the United States. The metal syndicate considers the 12,000 tons monthly copper figure too low, and believes that if the anticipated 8,000,000 tons of steel are produced in 1948, 17,000 tons per month of raw copper will be required, and that, on the same basis, the brass scrap requirements will rise to 4,000 tons per month.

Lead—Requirements of lead metal for 1948 are estimated at about 110,000 tons compared with a consumption of 95,244 tons in 1947, the increase being due to the rapid development of the electrification program and to generally increased industrial production. Imports of metal were 55,224 tons, of which 8,532 were supplied by the French Colonies. Production at La Plagne (Savoie) mine is holding up at 300 tons of 60 to 65% concentrate per month. The Les Malines (Gard) mine produced 141 tons of lead concentrate in the first quarter of 1948.

Manganese — Requirements of manganese ore for 1948 are estimated at about 240,000 tons. In 1947, imports of manganese ore totaled 175,000 tons including ferromanganese and manganiferous iron ore totaled 175,000 tons of which Morocco supplied 107,000 tons. In 1948 Moroccan mines are expected to produce 200,000 tons of ore.

Nickel—Based on a steel production of 8,000,000 tons, nickel metal requirements for 1948 are estimated at 6,500 to 7,000 tons. In 1947 production was 1,777 tons, and it is hoped that 2,500 tons may be produced in 1948. It is considered that 3,000 tons of metal is the maximum French production from New Caledonian matte.

Tin—Requirements of tin metal for 1948 are estimated at about 12,000 tons. Trade sources give imports for the first quarter of 1948 as 1,523 tons. It is expected that 10 tons of tin concentrate will be produced in 1948 at the Charrier mine in France. Two hundred tons of cassiterite, 71 to 73% concentrate, from the Cameroons are expected in 1948, but Indo-Chinese production will be insignificant.

Titanium—French titanium mineral requirements for 1948 are estimated by the trade at 4,000 tons, but there is little expectation that such a quantity will be available. Trade information gives local production from a plant in Alsace and using ilmenite from French West Africa and Norway, as about 1,500 tons, of which probably about 1,000 tons were sold in France in 1947.

Imports of ore from French colonies in 1947 were 9,000 tons of ilmenite from Senegal, French West Africa; three thousand tons of this ore is reported to have been imported into France in 1947, although 191 tons were exported from the Cameroons during the first nine months of the year.

Tungsten and Molybdenum—Combined requirements for 1948 of ores of these two metals are estimated at about 5,000 tons. Of this quantity 400 to 500 tons of wolfram, 60 to 65% concentrate, will probably be produced in France. The balance must be imported from foreign countries.

Zinc—Zinc metal requirements for 1948 are estimated at about 130,000 tons. In 1947, French consumption was slightly under 120,000. In 1947 domestic production of zinc blende, 50% concentrate, was just under 12,000 tons and 92,046 of blende and calamine were imported, of which 14,000 tons were received from the French colonies. In 1948 ore production in the colonies and in France may reach 40,000 tons and virgin metal production in France 60,000 tons provided sufficient quantities of ore are available. Algeria and Tunisia are the chief colonial sources of ore, both calamine and blende being produced Under normal conditions, Belgium supplies about 30,000 tons of France's yearly zinc metal requirements. Since January 1, 1948, deliveries from Belgium have been suspended, due to French lack of foreign exchange. French blende and metal supplies now are practically limited to domestic and colonial resources. It is reported that Les Malines mine produced 390 tons of blende, 50% concentrate, in the first quarter of 1948. Other sources of supply were formerly Mexico and Canada.

Fluorspar—Production during the 1st quarter 1948 for three domestic mines was: Langeac (Haute Loire), 3,000 tons; Beix (Puy-de-Dome), 2,032 tons; Saint-Jean-de-Jeanne, 469 tons.

Important improvements have been carried out at Beix, and it is anticipated that production will increase during the year.

Iron Ore—The over-all increase from a monthly average of 1,588,000 tons in 1947 to a monthly average of 1,820,000 tons in the first quarter of 1948 is to be noted. The output of the Normandy mines also is increasing slowly from a monthly average of 48,000 tons in 1947 to a monthly average of 64,000 tons in the first quarter of 1948. Much of this production is exported to Great Britain.

Potash Mining Modernized

Total output of the Alsatian potash mines was 2,506,471 metric tons of crude salt during the first half of 1948 which yielded 433,096 metric tons of K_2O. In 1947 production of crude salt added up to 4,167,675 metric tons against 3,517,382 metric tons in 1939. Total employment now is 13,627 workers against 12,382 last year.

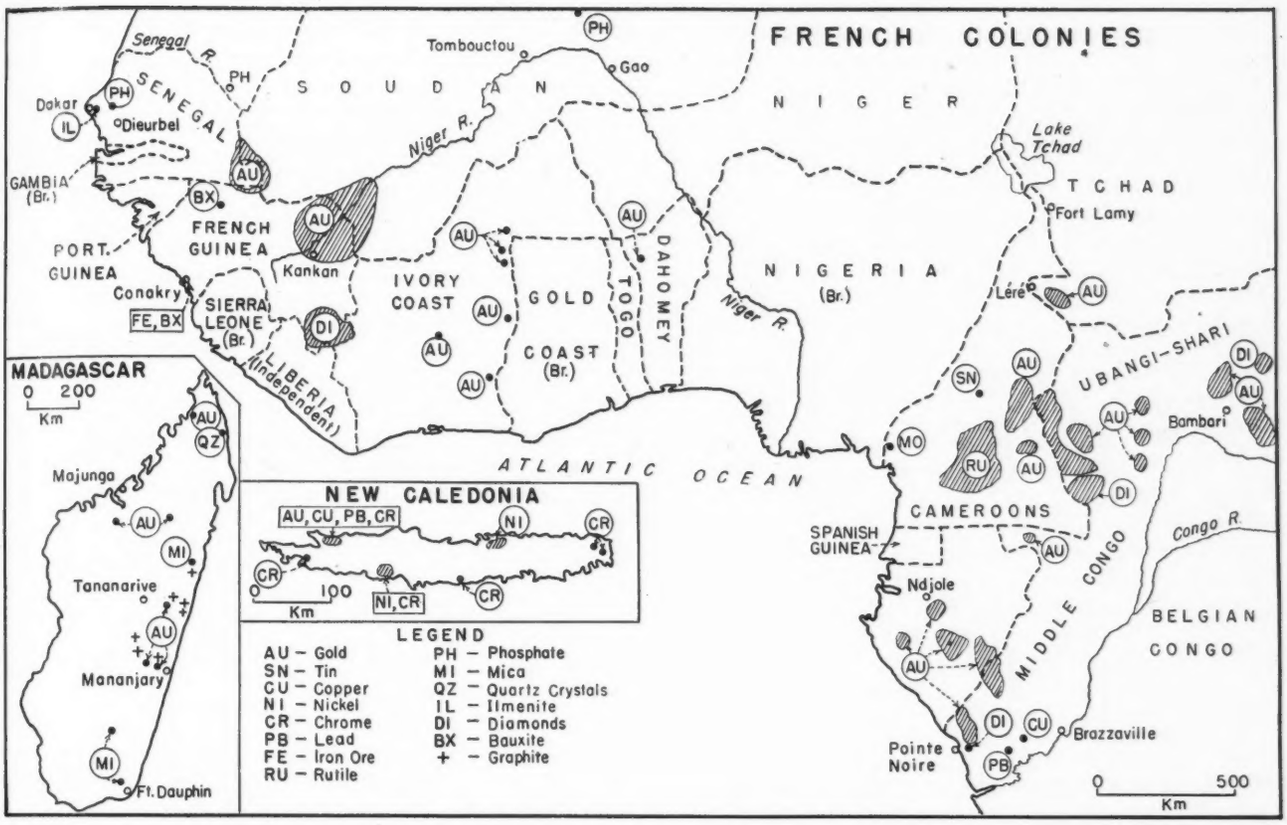
The export rate has increased slightly from a total of 626,844 tons of K_2O in 1947 to 382,482 tons in the first six months of 1948.

Some progress has been made in carrying out a 10-year program for modernization of the Alsatian mines. The main features of this program are a general switch from long-wall exploitation to room-and-pillar methods, substitution of flotation for the present method of precipitation of KCl, installation of mechanical loaders, use of more powerful drills and cutters, substitution of skips for cages, widening of tracks and use of bigger locomotives and 10-ton cars instead of ½-ton cars.

Ten Year Plan for Colonies

Started in 1946, France's 10-year plan for development of colonial resources is lagging more than a year behind schedule. With full scale implementation promised for 1948, however, planners are now confident that the program will be finished on schedule.

Goal of the development program is to more than triple the value of



FRANCE'S COLONIAL DEVELOPMENT PROGRAM aims to triple the value of prewar mineral exports from her colonies by 1956.

French prewar mineral exports from the colonies by 1956; mineral exports from the French colonies were valued at a total of 1.3 billion francs in 1938. Exports in 1956 would be worth 6 billion if the development plan meets its goal. (Both figures calculated on the basis of the real value of the franc at the beginning of 1947.)

The plan calls for a total investment of 7.4 billion francs (roughly $25 million at the official free rate of exchange). It is expected that 5.2 billion francs of this total will be private capital and 2.2 billion francs will be French Government investments. In addition, a minimum of $20 million and a maximum of $29 million will be needed for purchase of U. S. equipment called for by the plan.

Private enterprise is given the main responsibility for carrying out the development program as the investment figures show. The plan proposes to encourage investment of private capital by scrapping import duties on any mining machinery imported into the French colonies within the framework of the plan and by stabilizing taxes on colonial mineral production.

The plan officially encourages foreign investment—but only up to 49% of the capital of a given firm, control remaining in French hands. Foreign capital, in principle, will be welcomed only if it brings with it either technical know-how, modern machinery or new market possibilities.

A Bureau of Mines of Overseas France has been set up to manage all the Government's interests in colonial mineral resources. It is responsible for all geological research and mapping in the colonies; and it will vote the Government's shares in all colonial mining enterprises with mixed state and private capital. It will manage directly all state-owned enterprises.

The plan is divided into three phases to be pushed simultaneously: geological research, prospecting, modernization of existing mines and opening up of new mines. The research program calls for credits totaling 1,046 million francs. Of this 177 million francs will be spent for equipment and 869 million francs for staff expansion.

Biggest projects in the prospecting phase of the plan are:

1. Extensive investigation of reported copper deposits in the Congo, the Ivory Coast, Mauritania, Madagascar and New Caledonia.

French African gold deposits also will be explored intensively and prospecting teams will study possi-

French Pre-War Colonial Production[1]

FRENCH W. AFRICA	1938
Gold, kg.	3,954
Diamonds, cts.	61,929
Ilmenite ore m. t.	8,436
Ilmenite conc. m. t.	—
Zircon m. t.	16
CAMEROON	1938
Gold kg.	483
Cassiterite m. t.	305
Rutile m. t.	118
FR. EQ. AFRICA	1938
Gold kg.	1,239
Diamonds, cts.	15,914
Lead ore m. t.	4,954
Zinc ore m. t.	3,386
MADAGASCAR	1938
Flake graphite m. t.	10,496
Fine flake graphite m. t.	4,076
Mica m. t.	677
Precious stones kg.	310,833
MADAGASCAR (Continued)	
Precious stones (Indust.) kg.	—
Gold kg.	421
GUINEA	1938
Gold kg.	1,320
NEW CALEDONIA	1938
Nickel Matte (77% ni) m. t.	8,440
Chromite m. t.	52,216
Gypsum m. t.	—
OCEANIA	1938
Phosphate from Makotea m. t.	115,453
INDOCHINA	1938
Tin m. t.	1,622
Zinc m. t.	5,200
Tungsten (WO_3) m. t.	360
Gold kg.	320
Iron-Manganese ore m. t.	133,794
Phosphate m. t.	37,340
Bauxite m. t.	80

[1]From reports by French Over-Seas Bureau of Mines.

bilities of mechanized mining of deposits, and of using U. S. scraping and dredging techniques on alluvial deposits. Diamond prospecting will be carried out in Gabon, the Ivory Coast and Guinea. Tin will be prospected for in Nigeria, the Sudan, the Cameroons and the French Congo; phosphate deposits in Senegal and the Sudan; manganese deposits in French West Africa; lead and zinc in French Equatorial Africa and New Caledonia; beryl and quartz in Madagascar; and bauxite in Inini and Guinea.

Plans to Mechanize

French colonial mining has been based until now on the availability of cheap labor. Mining techniques were primitive but cheap. Although labor was cheap it was not plentiful. French colonies are generally underpopulated with the exception of Indochina. Shortage of labor therefore was another brake on colonial mineral output.

The nickel mines of New Caledonia and some of the gold mines on Inini already are partially mechanized. A start has been made at equipping the Faleme and Tinkisso gold mines in French West Africa with dredges but it is feared that the companies concerned do not have the capital to make a success of these modernization programs.

Mechanization under the plan will be patterned largely after proven American techniques.

The plan also proposes to increase colonial mineral production by setting minimum production quotas for each mine. Priority lists for development of mines under the plan will be worked out individually for each colony to avoid discrimination between colonies.

Here are production increases of the main colonial metals which the French hope to obtain under the programs:

Gold. Most of France's colonial gold before the war was mined by hand by the natives of French West Africa. Average yearly production was four tons. The plan aims to increase this production to six tons by the end of the fifth year of execution.

In addition, private gold production in the colonies is scheduled to be increased as follows:

	1945	Plan's 5th year (metric tons)	Plan's 10th year
Fr. Eq. Africa	2.37	6	15
Fr. W. Africa	.22	2	5
Cameroons	.51	1.5	4
Guyane	.64	2.5	5
Madagascar	.20	1	2

Diamonds. Two-thirds of French colonial diamond output is industrial stones. Here are the production targets set by the plan:

	Plan's 5th year (carats)	Plan's 10th year (carats)
Fr. Eq. Africa	200,000	300,000
Fr. W. Africa	100,000	200,000

Rutile. Production of the Cameroons is scheduled to be increased to 20,000 tons per year by the end of the plan.

Nickel. Deposits of New Caledonia are slated to be completely mechanized under the plan which also proposes to set up electrolytic refineries on the spot.

Iron. The plan envisages modernizing and mechanizing the iron mines at Conakry in French West Africa. Present annual production of about 20,000 metric tons of ore would be increased to about 2,000,000 tons per year. Approximate cost would be $3,759,000 of which $1,305,000 would be spent for modernization of port installations. The Conakry iron deposit is estimated to contain 2,000,000,000 tons of ore 49.4% Fe, 2,400,000,000 tons of ore 47.25% Fe, and 1,200,000,000 tons of ore 43.6% Fe.

Bauxite. The deposits of phosphated bauxite in Senegal will be mechanized under the plan with the objective of producing 100,000 metric tons of ore per year. Several million tons of ore per year are scheduled to be mined in Guyane-Inini by the end of the development program.

Tin. Equipment of Nigerian mines and improvement of transportation facilities under the plan is scheduled to increase production to 1,000 tons per year.

The plan does not include developments of the mineral resources of Indochina or plans for Algeria or Morocco. Indochinese development has been slowed to a virtual stop by nearly two years of bitter guerrilla fighting between French and Vietnamese nationalists. No detailed information is available in Paris on development plans for Morocco and Algeria.

Higher Gold Price Needed

Proposed development of colonial gold output cannot be carried out as long as producers are forced to sell their gold at the world price based on $35 per ounce according to Ministry of Colonies mining experts. Experts say margin of profit at present world price makes extensive development impossible. French see only two solutions to this bottleneck:

1. For the U. S. to raise the price of gold. They would prefer this way out but are not hopeful that the U. S. will agree.

2. Permission from the International Monetary Fund to permit French colonial gold producers to sell their gold in oriental markets where they could obtain dollars at higher than the world rate. No official request to this effect has been made to the Fund but unofficial hints have been thrown out. This solution would keep the hard currency received for gold within the framework of the French economy. As things are now, according to Ministry of Colonies officials, practically all the gold mined by natives and some of the gold mined by Europeans in the French colonies finds its way into Europe's black markets.

5—PORTUGAL

J. HERBERT RICHARDSON
McGraw-Hill World News
Lisbon, Portugal

ALTHOUGH PORTUGAL IS ONE of the 16 Marshall Plan countries, she has not yet participated in ECA activities. Because she has retained an appreciable dollar balance, Portugal was considered to be eligible for loans rather than grants. However, she is expected to request some mining and industrial equipment through ECA, but the amount has not yet been determined. In general it appears that Portugal is not pressed for ECA aid.

Despite the fact that Portgual's mineral wealth has been known since long before the Christian Era, few mines have been extensively developed, and exploitation has in general been pressed during war periods. For example, tin smelter production in Portugal rose from 30 metric tons in 1939 to 3,058 tons in 1943, and dropped to 373 tons in 1944.* This drastic drop coincided with a turn of events in World War II, after which unusually high

prices for tin could no longer be obtained. In a similar manner production of tungsten concentrates rose from 3,851 tons in 1939 to 7,477 tons in 1943.* 1947 production was estimated to be about 3,052 tons.

At present most of the operating mines are managed by British, Belgian or French companies and staffed by their technicians. A few American technicians are drilling for oil. But in general no impressive mining expansion programs are in evidence.

Many small and medium-sized mines are scattered throughout the territory north of the Tagus River. Another mining district producing chiefly pyrites and sulphur is situated in the southeastern part of the country along the Spanish border. Copper pyrites are abundant in the district of Setubal. Principal mines and mining companies are shown in the accompanying table.

Pyrites. Production of pyrites was secured chiefly from three groups of mines in Boixo Alentjo Province operated chiefly by British and Belgian capital. During the war years production was reduced from approximately 500,000 long tons annually to 130,000 tons.

Tungsten. Tungsten is found chiefly in the districts of Oporto and Branganca in the north, and Vizeu, Guarda, and Castelo Branco in the central part of Portugal. Approximately 150 tungsten mines are in Portugal, of which 43 contain tin-bearing minerals also.

Tin. There are 110 tin mines in Portugal including those producing wolfram as well. In many of them the ores also contain titanium, lithium, gold, silver or uranium.

Miscellaneous Minerals. Ilmenite production rose from 502 metric tons in 1939 to 798 in 1941, as compared with about 146 tons in 1947. Small amounts of lithium ore and beryl have been produced in the past and uranium is known to occur at Urgeiriea. Mica production was estimated at 350 tons scrap and 40 tons sheet in 1942.

Smelters and Refineries. Two important tin refineries are: The Portuguese-American Tin Co., at Belmonte, and the Tuela Tin Mines, Ltd., at Ervadosa. Both plants are electrolytic. Since 1939, the tin has been exported in ingot form, having been melted by electric power. Tin running 99.9% pure is sold directly from Portugal, also slag containing 97.58% tin. Other tin is treated in small Chinese furnaces scattered throughout the tin districts. Lead and copper matte totaling about 1,500 metric tons yearly are also produced in Portugal, but no zinc is treated.

*After U. S. Bureau of Mines data.

Principal Operating Mines in Portugal

Place, or name of mine	Minerals Found	Owned by
Aljustrel	Copper	S.A. Belge des Mines de Aljustrel (Belgian)
Belmonte	Tin	Port-American Tin Co.
Borralha	Wolframite (30 tons monthly)	Mines de Borralha S.A. (French)
Ervedosa	Tin and Arsenic	Tuela Tin Mines, Ltd. (British)
Jales	Gold	Minas de Jales Lda.
Lousal	Copper	S.A. Mines et Industries (Belgian)
Panasqueira	Wolframite 140 tons monthly)	Beralt Tin & Wolfram Co. (British)
Pintor	Wolframite Arsenic	Mina do Pintor Lda.
S. Domingos	Sulphur and Copper	Mason & Barry Ltd. (British)
Diamang, Angola	Diamonds	Companhia de Diamantes de Angola

PORTUGAL'S MINES are operated chiefly by British, French, and Belgian interests.

Metal Statistics For Portugal

(In Metric Tons)*

	Exports 1947	Imports 1947	Domestic Consumption
Antimony	18	31[1]	—
Arsenic	39	1	—
Chromium	813	—	—
Copper pyrites	303,909	—	95,000
Copper	12[2]	8,043[3]	150[15]
Graphite	—	70	—
Iron and steel	517[4]	163,685[5]	—
Kaolin	9,930	—	15,000
Lead	67[6]	2,442	—
Magnesite and dolomite	—	90	—
Manganese*	3,282[7]	—	750[7]
Mercury	0.5	13	—
Nickel	—	45	—
Silver, grams	25,230	—	—
Sulphur	7[8]	474	—
Talc	—	354	—
Tin	442[9]	1	125[13]
Tin	322[10]	—	170[14]
Tin scrap	12,499[11]	—	—
Tin scoria	391	—	—
Ilmenite	146	—	—
Wolfram	3,052	—	—
Wolfram residues	189	—	—
Zinc	10	1,704[12]	—

*Figures not official. Domestic consumption approximate. Dashes indicate information not reported.

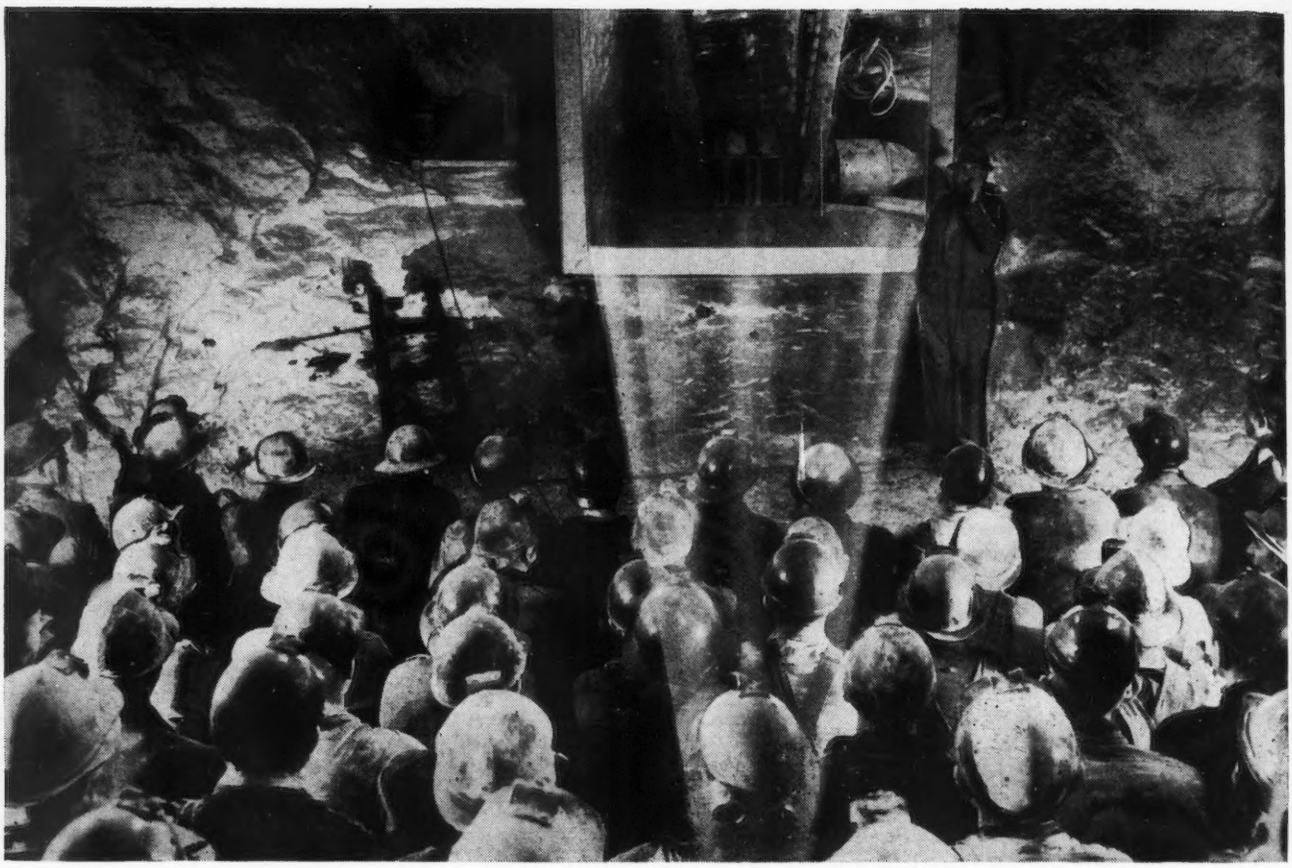
[1]Metal with lead. [2]Bars, sheet, wire. [3]Wire, ingots, other forms. [4]Unspecified. [5]All forms. [6]Bars and other forms. [7]Low-grade metallurgical. [8]From colonies. [9]Bars and unspecified forms. [10]Refined, or as cassiterite. [11]Includes scrap tinplate. Export now forbidden. [12]Includes metal, sheeting, unspecified forms. [13]Tin metal. [14]Cassiterite. [15]Precipitates.

Colonies

Mozambique (Portuguese East Africa) has been the source of amber mica cuttings in the past, and has exported 3,567 lb. of tantalum-bearing ores to the U. S. in 1943. More recently areas in the Tete district known to contain uranium-bearing minerals have been closed to propecting by the government to prevent haphazard exploitation. It was also announced in August, 1948, that graphite prospecting in the Nacala region which had been stopped by government order in November, 1943, may now be resumed.

Angola (Portuguese West Africa) also has phlogopite deposits and is an important producer of diamonds. During the first half of 1948, Angola shipped 1,630 short tons of metallurgical-grade manganese ore containing 880 tons of manganese to the United States.

Goa (Portuguese India) shipped 1,109 short tons of metallurgical grade manganese containing 55 tons of manganese to the United States during the first half of 1948.



IRRESPECTIVE OF CODES, training of miners in safe practice will cut accidents and costs. Photo by U. S. Bureau of Mines.

Better Safety Training and Inspection Endorsed

A REPRESENTATIVE NUMBER of leading mine safety directors and engineers, although thoroughly dissatisfied with progress being made in mine safety, is divided over the question of tightening up responsibility and penalties for accidents and code violations. Those opposed believe that safety is essentially an educational rather than a policing problem. Those in favor are largely influenced by the poor inspections and enforcement now practiced under many state codes.

Pursuant to publication of an article extolling the merits of the South African mine safety code (E&MJ, Aug., 1947, pp. 83-4), with

QUESTIONNAIRE ON SAFETY PRACTICES

1. Are you satisfied with the progress the mining industry (excluding coal) is making in safety?
2. If not, would you approve state codes that would make management and workmen legally responsible for safe operation, as proposed in the attached article?
3. If you disagree, what are your specific objections to the proposal?
4. Can you suggest alternative methods that would improve the industry's performance on safety?

REMARKS:

particular reference to the placing of responsibility for accidents on all elements of management concerned and negligent workmen as well, the editors of *Engineering and Mining Journal* sent copies of the article to 38 leading safety directors and engineers along with the questionnaire printed opposite. The purpose was to get a confidential reaction from the people best qualified to have authoritative opinions on the subject of mine safety, the men to whom it is of daily concern and who live with the problems at the operations themselves.

Of the 18 who replied, only one expressed himself as satisfied with the progress the mining industry (excluding coal) is making in safety. The reader should note here that the question refers to progress and not to the *status quo* in safety. Naturally, any progressive person would be dissatisfied with the current state of safe practices, but one can hold these views and still be satisfied with the progress being made.

The group was sharply divided, however, on the feasibility of state mining codes that would impose responsibilities commensurate with South African practice. Their remarks, representative extracts from which are quoted herewith, speak for themselves. It is evident that, whatever their reactions to the South African system, the group is deeply dissatisfied with the rather general practice of handing out state mine-inspection jobs to technically unqualified and uninterested people, typically political hangers-on or elderly participants in the labor movement. Quite obviously, the bulk of the safety experts would endorse a movement to take safety out of politics and to place it, insofar as Government is concerned, in the hands of well-qualified safety engineers. Purely because of the poor performance of many states in this respect, there is some endorsement of a Federal code and Federal enforcement.

Representative Extracts From Replies to Questionnaires

For responsibility and enforcement of codes drawn by management and labor.

"I approve the thought of establishing responsibility. I believe, however, that safety codes or regulations should be established for each individual operation by the management-labor group. This code should be approved by the state body charged with enforcement of state mining laws. The qualifications of inspectors should be firmly established to assure industry and labor that the inspector is qualified to 'inspect.' When this is done, apply the penalties as indicated within the article."

Lack of penalty promotes accidents.

"I have seen men killed because of infractions of safety rules and because of gross carelessness with no penalty whatsoever on the guilty person. A few cases seemed to be almost murder."

For competent inspectors, minus the politics.

"Obtain mine inspectors who are graduate professional engineers free of political appointment and free of fear of political dismissal."

Interest the unions in safe working practices.

"It appears the object of the proposed code is to secure safe engineering practices in operating a mine to prevent falling ground, cave-ins and similar types of accidents. In other words, to permit safe working conditions. We agree that laws should cover such conditions, and penalties should be provided in the regulations of the various state mining codes.

"It is my personal impression as safety engineer of several mining properties that great progress can be made by interesting the unions in safe working practices and living up to our mining rules. We have had great success by showing union safety committees their responsibilities in this regard. In addition, management must realize that suggestions from unions must be actively understood and handled so that the answers can be given to satisfy union members."

For Federal enforcement.

"Most states are understaffed as far as inspectors are concerned. It is a low-paying job, and the inspectors are not sufficiently trained. Operations in different mines vary too much and a man qualified to do this job would be too expensive. (Keep politics out of mine inspections).

"Give the United States Bureau of Mines authority to enforce the approved recommendations, subject to appeal by the courts.

"We feel that a Federal law is necessary to compel the States to adhere strictly to general regulations. The States take the rules and regulations too lightly."

Ontario sees that the law is enforced.

"The Mines Inspection Branch of the Ontario Department of Mines sees that the industry complies with the Act. All of the inspectors are graduate engineers, who are appointed because of ability and not for political preferment. They are permanent officials of the civil service, who do not change with changes in government. It is their duty to see that mining operations are conducted in as safe a manner as possible. They do a good job and there is a fine spirit of cooperation between the inspectors and mine management. There has been no better exemplification of this than in the drafting of the Act, as remarked above."

Safety-minded management preferable.

"We do not approve of state codes. If management is honestly safety-minded and bosses enforce rules and standards, good results will follow. During World War II, Congress passed laws regulating use of explosives and tried to regulate locations and construction of powder magazines, etc. Incompetent inspectors flooded us with conflicting proposals. The trouble is that most of the able, intelligent and competent individuals are employed in private industry."

Authority as to safety must remain with management.

"The proposal would bestow on the government too much police power over industry. Management must not turn its own authority over to governmental agencies, because such agencies cannot take commensurate responsibility with such authority even if government officials in charge of such agencies were so inclined.

"Each state should enact legislation granting and encouraging the self-insurer's privilege. Such an act will promote management's interest in safety because it would make safe practices profitable. Thus managerial authority will be retained where the responsi-

bility must remain—in the hands of management.

"Management should enforce safe practices through the appointment of competent, well-trained, adequately experienced and courageous safety engineers, fortified with sufficient authority really to enforce management's safety policies."

Management should not be liable to legal punishment.

"Referring to Mr. Pifer's article which inspired this questionnaire, there seems to be too much in the way of penalties already upon mine supervisors. The president of the AIME recently stated that the reason Russia has not explored her possibilities for finding more oil is that a geologist in Russia does not dare drill a dry hole. The potential liability in any mine for an accident of disaster proportions would be sufficient to make the job of running a mine unattractive if every manager were to be subjected to legal punishment at the opinion of some bureau or commission which might sit in judgment upon him.

"It has been my belief that, notwithstanding the mining regulations and penalties in South Africa, their accident rate, especially the fatal accident rate, is much higher than that for comparable operations in the United States.

"It is traditional that one miner does not 'squeal' on another. All over America practically every miner will quit his job rather than report a wrong action against a fellow worker. It is my opinion that they would just as willingly go to jail if some law were made which would prescribe a fine or jail punishment for not reporting infractions of safety rules. Americans must never countenance any law, rule or regulation which requires one man to spy upon another.

"Any supervisor who cannot sell the importance of safety to a crew of 25 to 30 men, which is the usual boss' crew, without calling in the law, is not a worthy boss and should himself be replaced. Miners should not even be discharged for violation of most of the safety rules until intent to harm has been demonstrated by repetitions of the violations after reasonable effort has been made by the boss to get the miner to obey them. Once discharged, however, for violating safety rules, 'with intent to harm,' the individual so punished should not be re-employed."

Management and men must cooperate.

"Accident prevention requires the cooperative effort of management and employee. This effort must be over and above anything that might reasonably be required by law. More thorough application of the educational, inspiring training competition, with application of penalties only in special cases, should be most effective means for improving performance."

Safety promoted by engineering methods, not police methods.

"I do not believe that safe mining can be achieved by a multitude of legal regulations, such as would be required under Mr. Pifer's proposal. Safety is achieved through engineering methods which would be difficult to specify in many instances; through training in safe practices which is still in its infancy in the mining industry; and through fair and reasonable enforcement of company rules. As extensive code backed up with 'police methods' will not work in the industry in my opinion.

"I see no reason to believe that the states will do a better job in enforcing an extensive code than they are now doing in enforcing current ones.

"I believe officials would be less inclined to attempt to eliminate accidents by improving equipment, installing safeguards and developing better methods, and would be more inclined to blame the man.

"A plan based mostly on force will result in bad relations between the employer and the employee.

"Briefly, here are some methods that would improve the industry's performance in safety:

"Safe methods and practices are particularly essential in mining but the nature of the operations makes training difficult. A sound and practical method of instructing bosses and men is badly needed for safety and other reasons.

"More effective enforcement of existing codes by states and modernization of them.

"More active promotion of mine safety by mining associations.

"Closer cooperation between unions and companies. There are numerous instances in many industries that prove the strong influence of unions in getting members to observe safe practices."

Adequate safety instruction for everybody.

"I would establish job procedure instruction at every mine and require every employee, regardless of seniority or experience to take it, with periodic re-examination to refresh his memory on company policy or required safe practices and to bring him up to date on current happenings.

"Re-examinations are required by law for airline pilots, primarily for passenger safety, and yet we do nothing in regard to safe working practices for miners whose unsafe acts endanger hundreds of men."

Cost cutting through safety.

"Publicize the achievements of individual safety programs with emphasis on financial savings. Any business man is interested in cutting costs, and any well-conceived and administered safety program will cut costs."

Drilling of Florida Dune Sand Investigated

TITANIUM MINERALS, zircon, kyanite, sillimanite and others of the so-called "heavy minerals" or "black sands," are widely distributed in Florida. These minerals were originally formed by magmatic and metamorphic action. Their occurrence in the State is the result of natural sedimentary processes. They were presumably derived from the Piedmont area to the north, where the crystalline rocks weathered and disintegrated and were eventually transported by stream and ocean currents to the Florida area. Later, reworking and distribution of the sediments by ocean, lake or stream action, or combinations of these, and the winnowing out of lighter materials by waves and wind left concentration of heavy minerals in favorable locations.

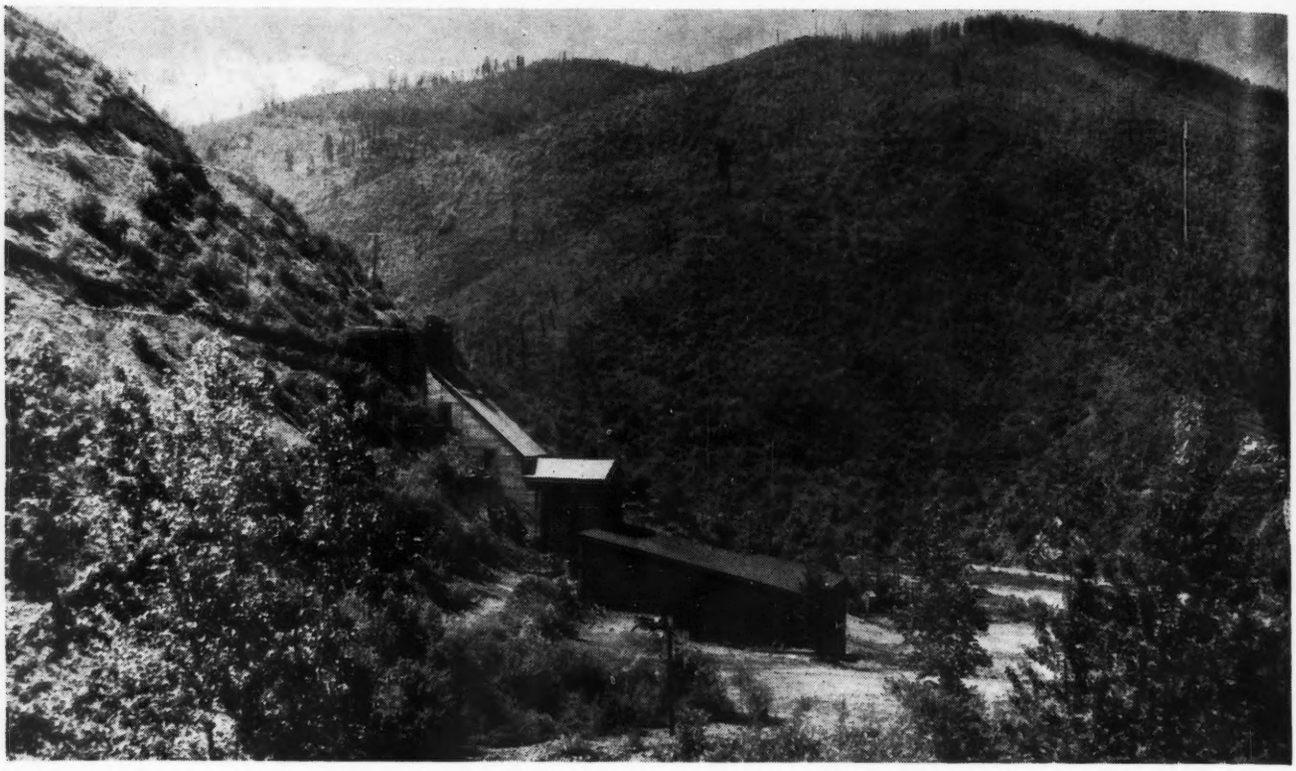
The Bureau of Mines has conducted a drilling investigation of an ancient dune area in northeast Florida known as Trail Ridge. The methods used are described in Report of Investigations 4227. It is believed that a study of the problems combined with field trials of designs of equipment and drilling methods will provide improved means for coring this material.

Deep Shafts of the World

Shafts of 4,000 ft. vertical depth below collar, or deeper, are included. Depths are as of Jan. 1, 1948

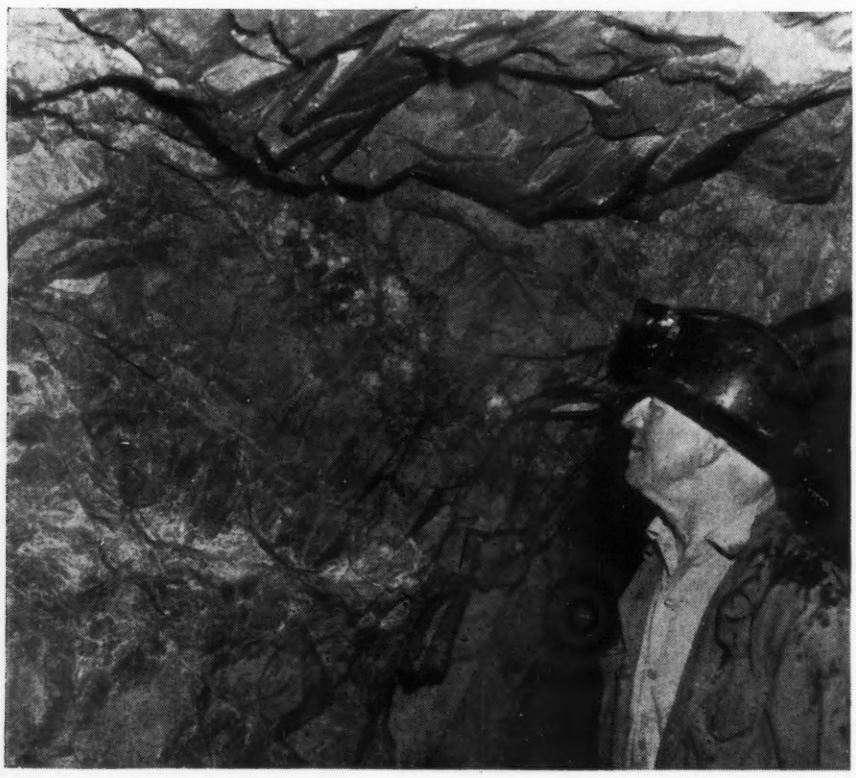
Location, Company	*Vertical Depth Below Collar*
UNITED STATES	
California	
Argonaut Mining Co.	5,587 (*a*)
Kennedy Mining & Milling Co.	5,912 (*b*)
Empire-Star Mines Co., Ltd.	
Empire	5,087 (*c*)
North Star	4,230 (*d*)
Arizona	
Magma Copper Co.	
No. 3	4,908
No. 5	4,935
No. 8	4,820
14 Winze	4,809
Montana	
Anaconda Copper Mining Co.	
Anselmo	4,301
Badger	4,168
Mountain Consolidated	4,473
Steward	4,032
Michigan	
Quincy Mining Co.	
No. 2	6,197 (*e*)
Calumet & Hecla Cons. Copper Co.	
Red Jacket	5,690 (*f*)
Tamarack No. 5	5,308
CANADA	
Quebec	
East Malartic Mines	4,000
Lamaque Gold Mines	3,600
Noranda Mines, Ltd.	6,021
Normetal Mining Corp.	4,000
Ontario	
Falconbridge Nickel Mines	4,000
Hollinger Cons. Gold Mines, Ltd.	5,300
International Nickel Co.	5,562
Kirkland Lake Gold Mining Co.	5,885
Lake Shore Mines, Ltd.	8,075
Macassa Mines	4,800
McIntyre-Porcupine Mines, Ltd.	7,025
Paymaster Consolidated Mines, Ltd.	4,075
Sylvanite Gold Mines	5,605
Teck-Hughes Gold Mines	6,105
Wright-Hargreaves Mines	7,272
Manitoba	
Hudson Bay Mining & Smelting Co.	4,000
San Antonio Gold Mines	4,000
BRAZIL	
St. John del Rey Mining Co., Ltd.	
Series of Vertical Shafts	
"D" shaft, Collar to 8 Horizon	2,264
"E" Shaft, 8 Horizon to 12 Horizon	3,424
"F" Shaft, 12 Horizon to 16 Horizon	4,626
"G" Shaft, 16 Horizon to 20 Horizon	5,826
"H" Shaft, 20 Horizon to 22 Horizon	6,426
"K" Shaft, 22 Horizon to 27 Horizon	7,533
43 Winze, 27 Horizon to Sump	8,051
SOUTH AFRICA	
The Witwatersrand	
Vertical Rectangular Shafts	
Blyvooruitzicht	
No. 1	5,042
No. 2	5,073
City Deep, No. 5	5,849
East Daggafontein, May	4,025
Durban Roodepoort Deep	
No. 5	4,992
No. 6	4,868
East Geduld, No. 2	4,137
East Rand Prop. Mines	
Central	5,981
South-West	5,107
Grootvlei	
No. 3	4,170
No. 4	4,390
Rand Leases, No. 11	4,640
S. A. Lands, No. 1	5,000
Simmer & Jack, South Deep	6,331
Sub Nigel, No. 3	5,300
Vlakfontein, No. 1	5,252
Vogelstruisbult, No. 1	4,254
West Rand Consolidated, Deep Shaft	4,942
Western Reefs, No. 2	4,338
West Spaarwater, No. 1	5,033
West Springs, No. 2	5,331
West Springs-Springs, Joint Shaft	4,893
West Vlakfontein, No. 1	5,588
Circular Shafts	
East Rand Prop. Mines	
South-West Sub-Vert.	4,200
Libanon	
No. 1	4,110
No. 2	4,468
Elliptical Shafts	
Vlakfontein-Sub Nigel, Joint Shaft	5,158
Vogelstruisbult, No. 3	4,333 (*h*)
SOUTH INDIA	
Kolar Field	
Mysore Mine	
Edgar's Shafts (three stages)	
1st Edgar's Vertical	3,688 (*i*)
2d Edgar's Sub-Vertical	7,801 (*i*)
3d North Auxiliary Vertical	8,064 (*j*)
Champion Reef Mine	
Gifford's Shafts (two stages)	
1st Gifford's Shaft	6,556 (*i*)
(Heathcote's Shaft)	8,319 (*j*)
2d (Biddick's Shaft)	8,712 (*j*)
Ooregum Mine	
Circular Shaft (three stages)	
1st Circular Shaft	4,655 (*i*)
2d Auxiliary Shaft	8,730 (*i*)
3d Auxiliary Main Winze	9,220 (*j*)
(May 31, 1948)	
Bullens Shaft (three stages)	
1st Bullens Vertical	3,703 (*i*)
2d Bullens Incline	8,102 (*k*)
3d Bullens Main Winze	8,524 (*j*)
Nundydroog Mine	
Henry's Shaft (three stages)	
1st Henry's Shaft	4,088 (*i*)
2d No. 1 Auxiliary	7,064 (*i*)
No. 2 Auxiliary	7,064 (*i*)
No. 3 Auxiliary	7,064 (*i*)
3d No. 1A Auxiliary	7,400 (*j*)
(June 30, 1948)	
No. 2A Auxiliary	7,362 (*j*)
(June 30, 1948)	
No. 3A Auxiliary	7,425 (*j*)

(*a*) Inclined depth below collar 6,390 ft. (*b*) Inactive. (*c*) Inclined depth below collar 11,008 ft. (*d*) Inclined depth below collar 8,000 ft. (*e*) Inclined depth below collar 9,100 ft. (*f*) Includes 4,900-ft. vertical shaft and connecting incline. (*h*) Sinking. (*i*) Shaft bottom. (*j*) Shaft sink. (*k*) Shaft sink. Interval on incline is 4,685 ft.



WINDOWLESS MILL of Nabob Silver-Lead Mining Co. in Pine Creek district of Coeur d'Alenes, Idaho. Company is driving low-level tunnel to cut cost of getting ore to mill and to open up new orebodies. Winter's snow makes trucking ore too difficult.

Developing the Nabob Mine



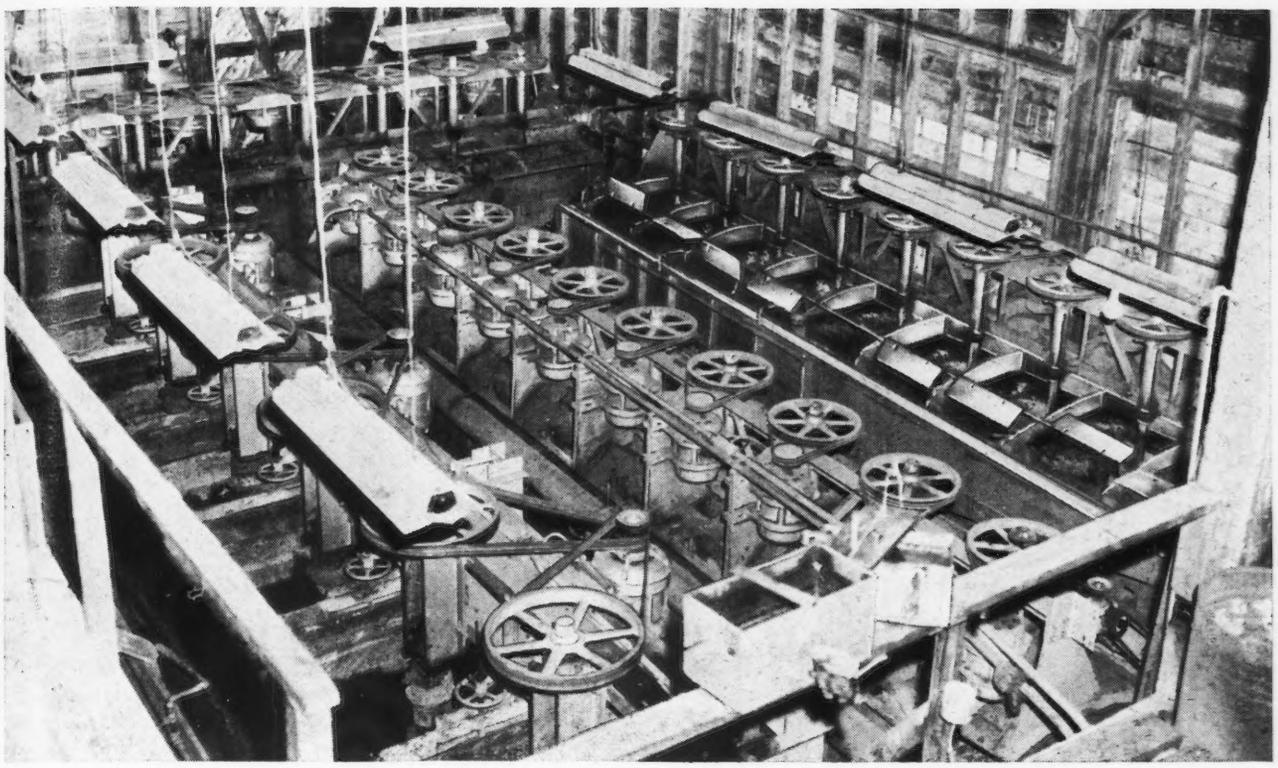
HIGH GRADE STREAKS are cut as Nabob tunnel progresses. C. C. Dunkle, manager, examines rich silver-lead vein cut at 2,100 ft.

R. H. RAMSEY
Acting Editor

ONE OF THE PLEASANTEST things about the metal mining business is its tremendous range. On the one hand, we have the sweeping large-scale development programs of the Greater Butte Project and the Minnesota taconites. These are achievements on the grand scale, in which every industry member can take pride.

On the other hand, one can take equal pride, and even more pleasure, in the highly personalized kind of mining represented by Cecil Van Meter and Stanley Sullivan drilling, blasting and mucking out their rounds in the Nabob tunnel out in the Pine Creek district in Idaho. They make up one shift of the crew that is driving that tunnel, and they also make up a small but very essential part of a very large industry.

The Nabob is one of those small mines whose development may open up a big mining district some day. It is owned and operated by a



OPERATOR'S VIEW of lead-zinc flotation floor shows how man stationed at discharge end of ball mill (behind camera) can see everything. Six 4x4-ft. Denvers float lead, and 32 Stearns-Roger 28-in. cells float zinc. Constant-intensity fluorescent light aids operation.

group of men from Kellogg, Idaho, and so far it has done very well. The company has made enough money to build one of the best little mills in the Coeur d'Alenes, and it is now engaged in driving a tunnel from the mill level to make it easier to get ore out for treatment.

Nabob's ore outcrops on the hill not far from the Sydney mine about 3,000 ft. above Pine Creek, southwest of Kellogg. Prospectors found the outcrop back in the 90's, and someone eventually built a tramway to get ore down the mountain. The tram burned in the fire of 1923 that wiped out so much of the timber in the Pine Creek area.

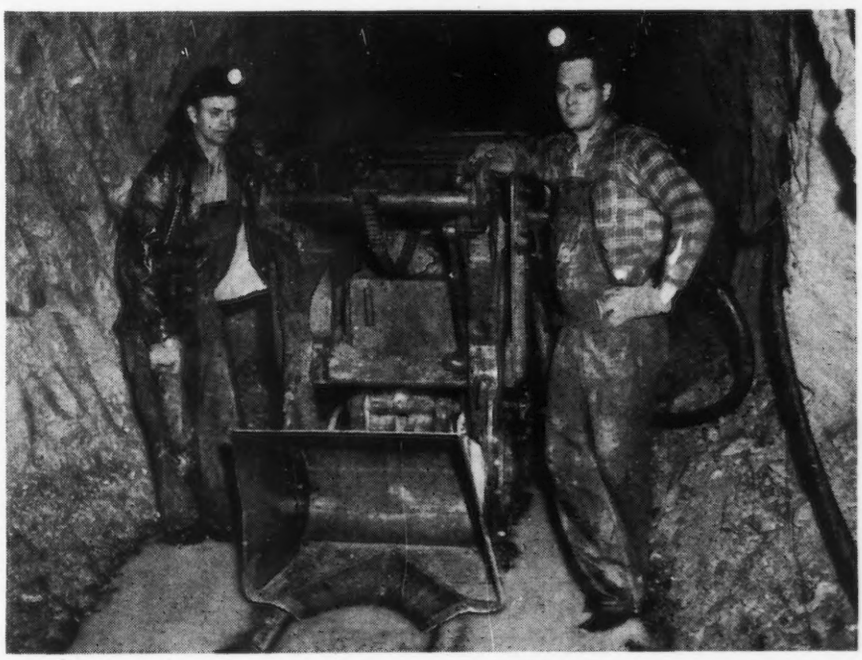
Tunnel Needed

The Nabob orebody, rich in silver and lead, was mined now and then thereafter, and by 1942 there was about 100,000 tons blocked out but no one mining it. That was when the present group of men took over. They are: Thomas R. Jones, president; C. C. Dunkle, vice president and manager; June Olson, secretary and treasurer, all from Kellogg.

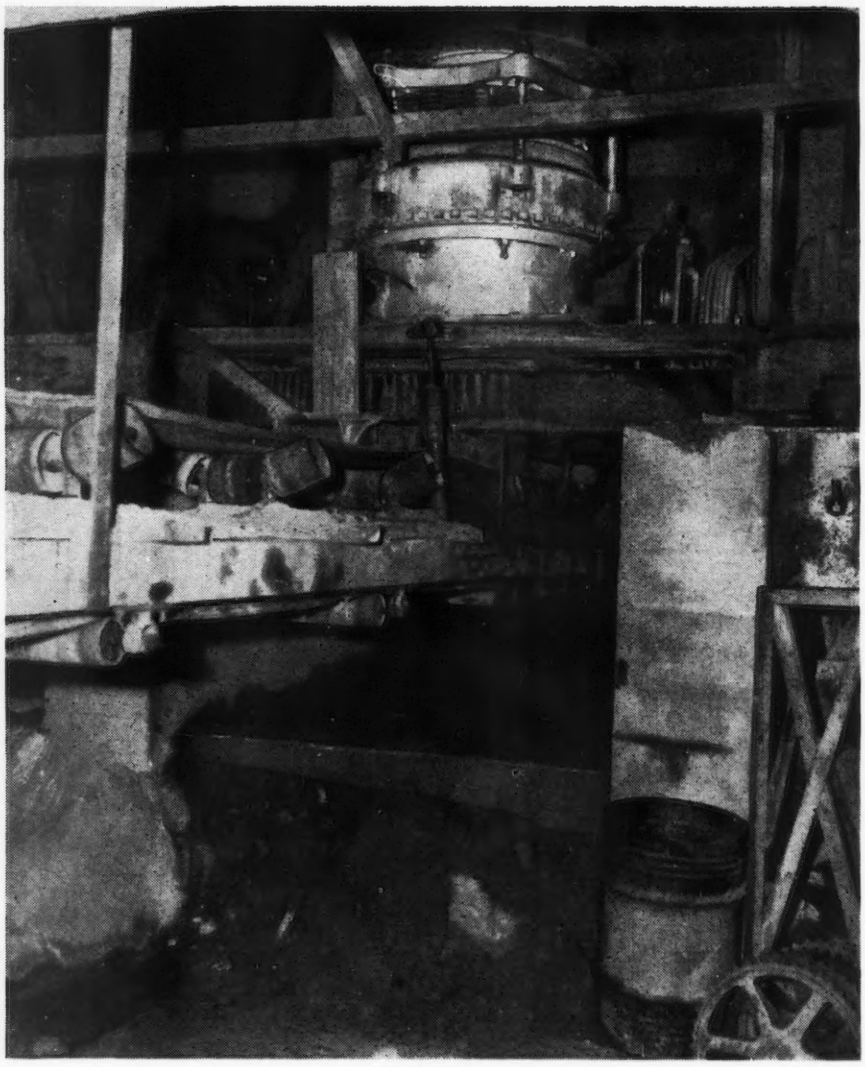
Up to the time premiums were cut off, the Nabob did very well, except for one difficulty. With the return on ore shipments of $100,000 or so, the group built the present 250-ton mill, but it became apparent that the mine could not properly supply the mill, situated as it was. Especially in winter it was hard, and sometimes impossible, to get men up to the mine and ore down.

The solution seemed to be to drive a tunnel into the mountain to tap the ore from beneath, and also open up any additional orebodies that might lie under the known ore.

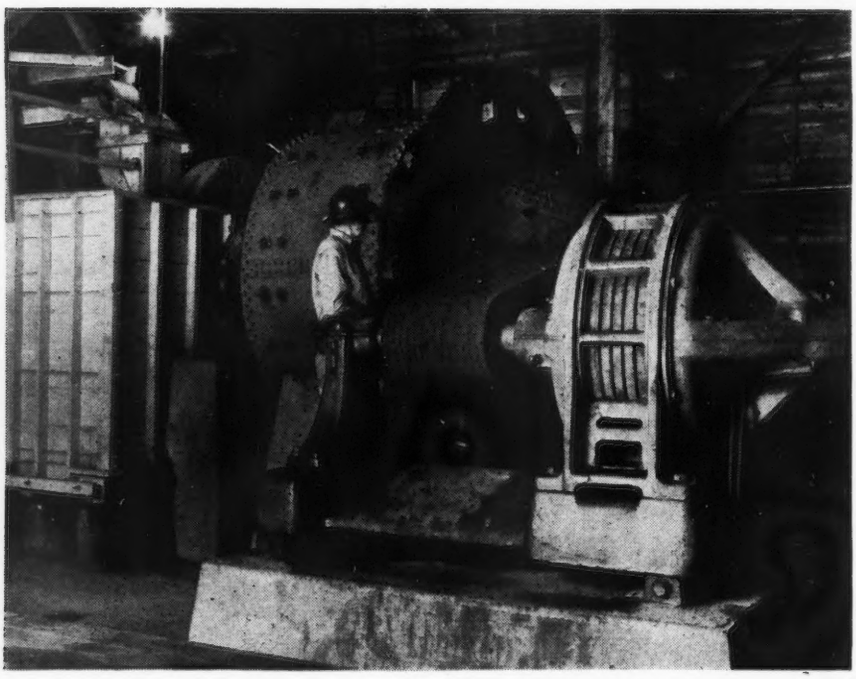
When the pictures accompanying this article were taken, the tunnel was in about 5,000 ft. with another 1,000 ft. to go. Plans called for



THREE CREWS of two men each advance 8x9-ft. heading 400 ft. a month to open orebodies from below. Cecil Van Meter (left) runs motor; Stanley Sullivan runs the Eimco loader.



PLENTY OF HEADROOM characterizes Nabob mill. This 24-in. Gyrasphere is set high enough to permit easy cleaning of spills under conveyor.



CLEAN INSTALLATION is typified by the 8x4-ft. Hardinge mill, closed with a 6-ft. Dorr classifier. The ball mill feed belt has a variable-speed motor.

completion by Sept. 1. Harry Smith Co., Kellogg contractor, is driving the tunnel, using two men to a shift.

As the photograph indicates, a number of high-grade veins have already been cut. It is hoped that the tunnel may give access to an ore-bearing zone that is much wider than the original limits of the Nabob.

The first thing you notice about the Nabob mill is that the building has no windows. Built that way, the structure goes up easier and the millmen have better light to work by than windows can give them. An ample and unchanging 24-hour source of artificial light actually improves results in a mill by making it easier for operators to judge results.

In other ways, the Nabob mill shows evidence of having been designed by men who had worked in mills. There is plenty of room under conveyor belts to make it easy to clean up spills. No piece of equipment is crowded or wedged in among timber or flooring.

Easy on Operators

Best of all, the grinding and flotation sections are built around a central station where the operator can stand and see how each of his units is doing. He can take density and pH samples, control the grinding circuit, and watch over the lead and the zinc flotation circuits, all from the same point in the mill.

In common with most mines of the Coeur d'Alene district, the Nabob ore carries a lot of wood from mine timber and wedges. Most of the wood that is not picked or screened out usually winds up as chips on the classifier overflow screen. The Nabob washes these chips before throwing them away because they carry too much lead and silver to be discarded. At some other mines in the area, the Sunshine, for example, such wood chips are dried and burned, the ashes going to the smelter.

At present, the Nabob's mill is down, pending completion of the tunnel. But in a month or so, the new way will be open to the ore that was once so painfully brought down over the mountain, and the mill will be rolling again. For the ultimate good of the mining business, we like to see new mining districts prosper, and we therefore wish continued growth and prosperity to the Nabob and to the Pine Creek district of which it is so active a part.

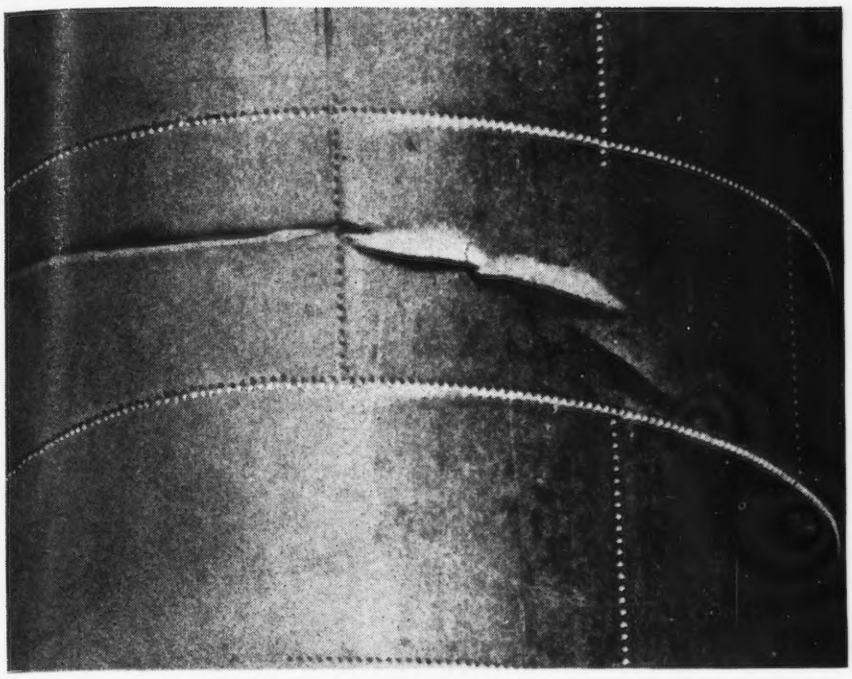


FIG. 1. THE WRINKLES in the reverberatory stack, as photographed by means of a telephoto lens (from Anaconda files).

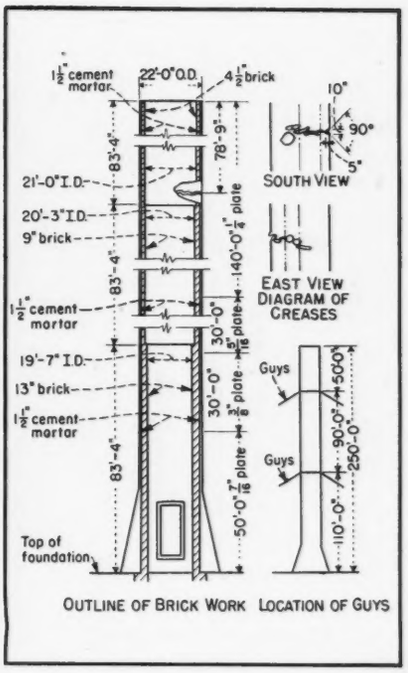


FIG. 2. DIMENSIONS and mode of construction of stack, and location of wrinkles.[1]

Repairing a Smelter Stack Wrinkled by an Earthquake

CLARENCE W. DUNHAM*

New Haven, Conn.

AN EARTHQUAKE of seemingly moderate intensity occurred Aug. 2, 1946 at Potrerillos, Chile, S. A. where the reduction plant of the Andes Copper Mining Co. is located. Shortly thereafter a general inspection of the structures revealed serious wrinkles in the steel stack at the reverberatory plant. Some of these were estimated to be 5 in. deep. The top of the stack was also found to lean about one foot out of plumb towards the damaged side. It seemed probable that the lining was also seriously damaged.

The stack was built in 1925. Its general dimensions and structural features are shown in these pages, together with the location of the wrinkles. Inasmuch as this stack served all of the reverberatories, its possible failure in a subsequent earthquake was regarded with alarm because it would shut the plant down. The New York office was asked to devise a scheme for repairing and strengthening the stack with the help of the men and equipment at the plant.

Guy Wire Design

The wrinkles were just above the offset where the 9-in. brick-and-mortar lining was reduced to 4½ in., and between the two sets of guys. A brief study of how the structure might act when subjected to a horizontal vibration at its base suggested that this location was a critical one.

The lighter, upper third would tend to whip and vibrate differently from the lower, heavier portions. It seemed that these vibrations could cause the upper guys to resist in one direction while the lower ones were acting oppositely, thus causing a tendency to snap the top of the stack back and forth even more violently than would the cantilever action alone.

The real problem was how to save the structure. Nevertheless, the study indicated that the use of double guys to resist earthquake shocks is open to serious question.

The problem of reinforcement was influenced by the following considerations: The repairing had to be done before another severe shock occurred. There was complete lack of major construction equipment at and near the plant. Materials had to be used that could be gotten quickly under war conditions. All materials, moreover, had to be shipped from the United States. Length and bulk of pieces would have to be minimized. A safe and economical scheme of reinforcement had to be invented.

Several Ideas Tried

An idea that suggested itself at the outset was to remove both sets of guy ropes to make the stack act as a cantilever. However, the base and its foundation were not designed for this, and could not be made adequate without great expense. The plates were also too thin. It was inadvisable, moreover, to depend on the single-riveted,

*Associate professor of civil engineering, Yale University and consulting structural engineer to Anaconda Copper Mining Co., New York, N. Y.

[1]Drawing from the book *Planning Industrial Structures*, by C. W. Dunham, McGraw-Hill Book Co., New York, N. Y.

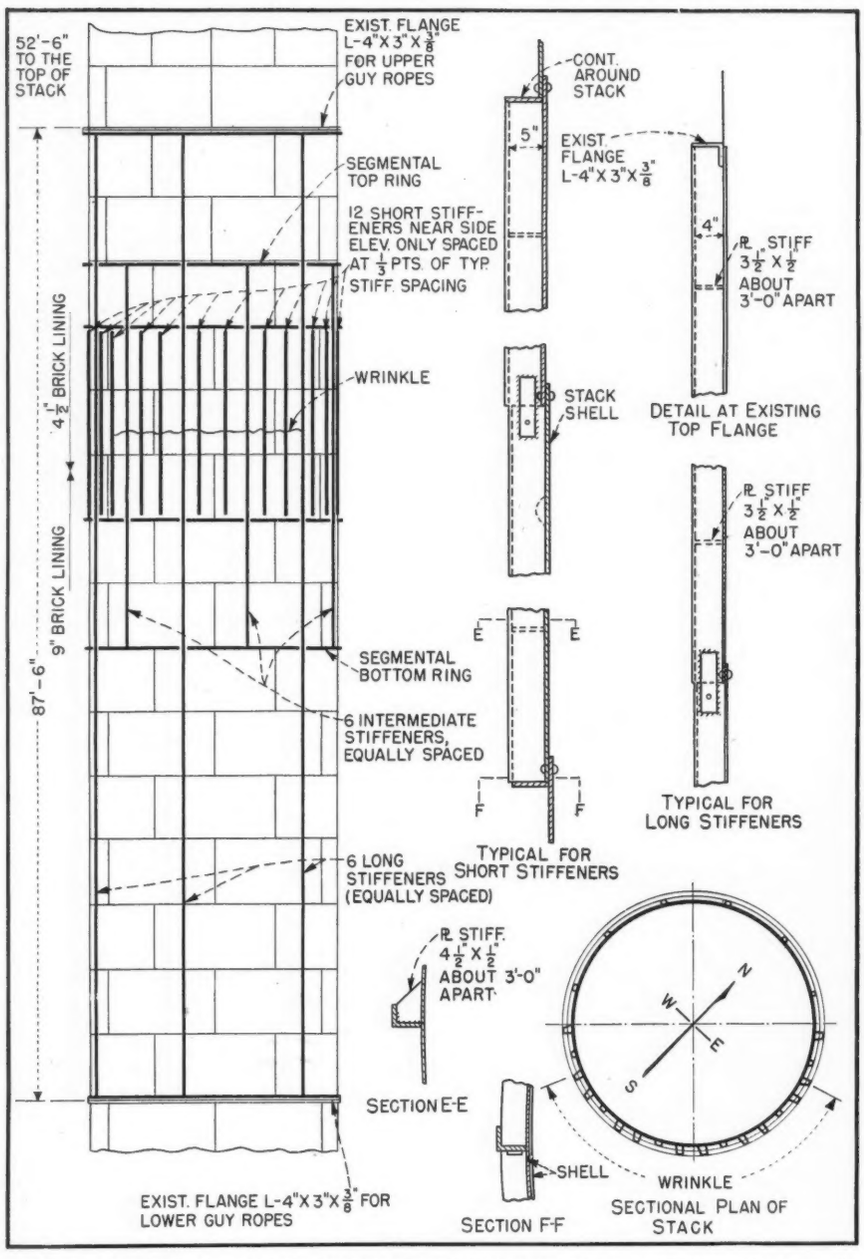


FIG. 3. DETAILS OF THE REINFORCEMENT MEMBERS that are to be welded on the stack between the upper and lower guys.

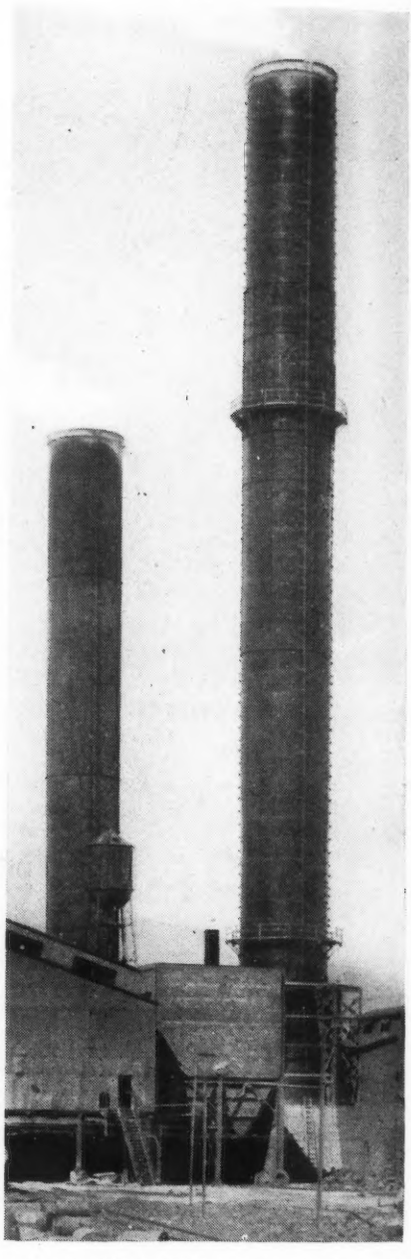


FIG. 4. THE STACK is seen on the right, after making repairs and reinforcements.

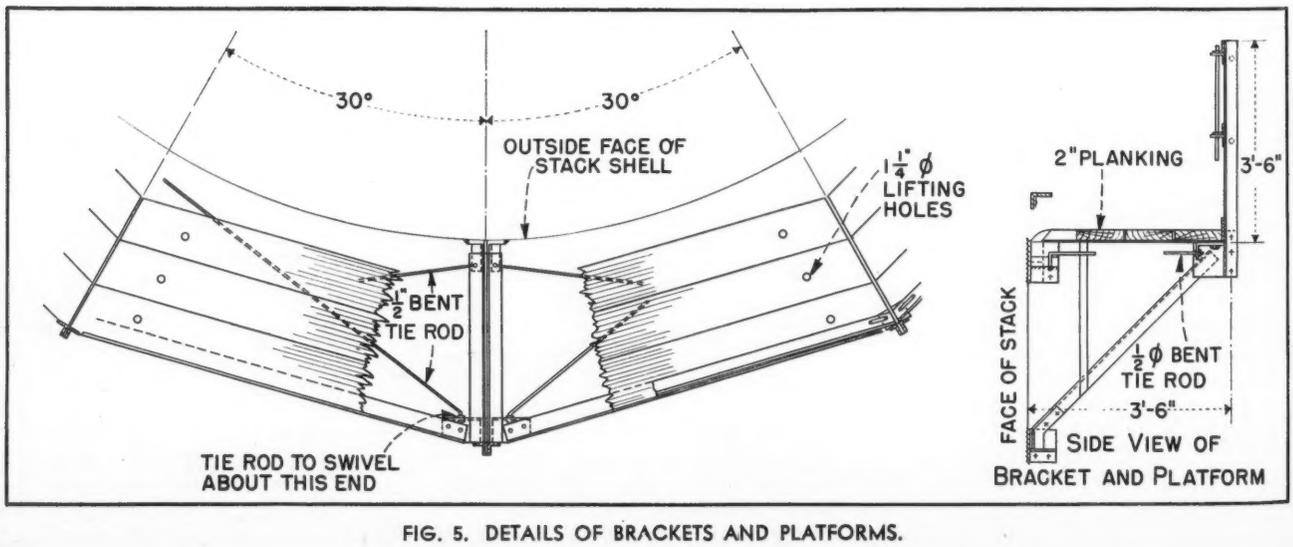


FIG. 5. DETAILS OF BRACKETS AND PLATFORMS.

lapped joints for resisting vertical compression.

Omission of one set of guys was next considered. This also was undesirable because neither set would be located properly. The strength of the ropes and their anchorages would be inadequate for severe winds. The elongation of the ropes would be excessive. The stack would still have to be strengthened substantially. Hence it was decided to keep the guys as they were.

If local patching over the wrinkles were used, it might cause a "hard spot" in the structure. Future vibration might cause more wrinkles at the ends of the reinforced section. Furthermore, no one knew how near other portions had been to failure.

The structure seemed capable of resisting any probable cantilever action above the upper guys. The heavier plates below the lower set also seemed sufficient. It was therefore decided: (1) that the reinforcement should be confined to the middle portion; (2) that this strengthening should consist primarily of welded, vertical stiffeners; and (3) that local patches should be used over the wrinkles.

Getting At the Trouble

As shown in Fig. 3, the section between the ring angles at the rope connections was to be reinforced with six vertical, welded stiffeners at an angle of 60 deg. Six intermediate angle irons were to be added in a 35-ft. section centering approximately at the wrinkles. Then 12 more short stiffeners were to be added on the wrinkled half. New ring angles were to be added at the ends of the shorter stiffeners. The idea was to "taper" the reinforcement from the weakened region out to the guys so that there would be no sudden change of stiffness.

But how could this reinforcing be done? The plant did not have enough wood or other suitable materials on hand to build a staging around the stack and to the necessary height. Use of a series of "bosun's chairs" hung from the rim at the top of the stack was suggested. However, the nature of the work of handling and welding steel from such flimsy supports made this too hazardous.

The possibility of suspending an annular working platform from the top was then studied. If this were started at the top of the belled portion of the stack, it would be difficult to get it past the lower guys. The cost and lack of materials made it desirable to avoid using a staging up to the lower guys. Furthermore, the elongation of the ropes, the possible inequality of supporting reactions, the possibility that the ropes might slip, the danger of welding near the ropes, and the weakness of the ring at the top of the stack caused this scheme to be abandoned.

Platform Suggested

The next idea was to use an articulated annular platform of bolted steel that could be started at the top of the flare and supported from the plates of the stack. A series of short, vertical stiffeners was to be welded on each ring of 6-ft. plates just above the platform. The latter would be composed of brackets that could slide up the side of the stack like sleds. They were to be suspended by pairs of long, threaded bolts. These would be so arranged that a hook in the top of each could be passed through a hole near the top end of a stiffener angle. The bottom of each would pass through an angle shelf on the bracket.

By attaching one set of the bolts to a set of welded stiffeners around the stack, the vertical load could be supported. The tendency of the brackets to tip outward was to be resisted by the tension in a circumferential channel that was to be part of the platform. Then, by turning the nuts on all of the bolts (under the shelf angles) the entire platform could be raised one lift.

A new set of stiffeners could then be welded on the next ring of plates, the second set of bolts attached, and the load shifted off the old ones to the new bolts. However, this method, although rigid enough, was considered to be too slow and fussy. Furthermore, it would involve a difficult dismantling and reassembling job to get past the lower guys.

The Final Scheme

The erection scheme finally adopted is what was called a "leap-frog" arrangement. The details are shown in the drawings. Twelve vertical rows of special cleats were welded in rows on the outside of the stack plates at equal spacing. The first set was placed just above the top of the bell to hold the tops and bottoms of the brackets. One set of brackets and the platform framing were erected.

Working from the first platform, a second set of cleats was welded on the stack above the first one, and another complete platform was erected at the higher level. Still another set of cleats was attached above this. Then the lower platform was dismantled piece by piece, lifted up, and progressively reerected at the next higher level.

All parts were designed so that they could be hooked from above, raised to the new platform position, and set in place, without difficult bolting and other attachments. All parts were light enough to be handled by man-power alone. This was continued to the lower guys. Above that, the stiffeners were welded on in approximately 6-ft. sections, and the cleats were attached between them. This procedure was followed to the upper guys. Then the cleats were attached and the platforms were raised on up to the top of the stack for use in the inspection and painting of the steel.

In this manner the platform was "jumped" from one level to the next, either up or down. The welded cleats, as shown in the right foreground of Fig. 5, became a permanent part of the stack. Thus the platform could be moved up or down, and can be reused in the future for maintenance. As shown in Fig. 5, one platform has been left near the damaged section for future inspections. Access to the platforms was made from the ladder already on the stack.

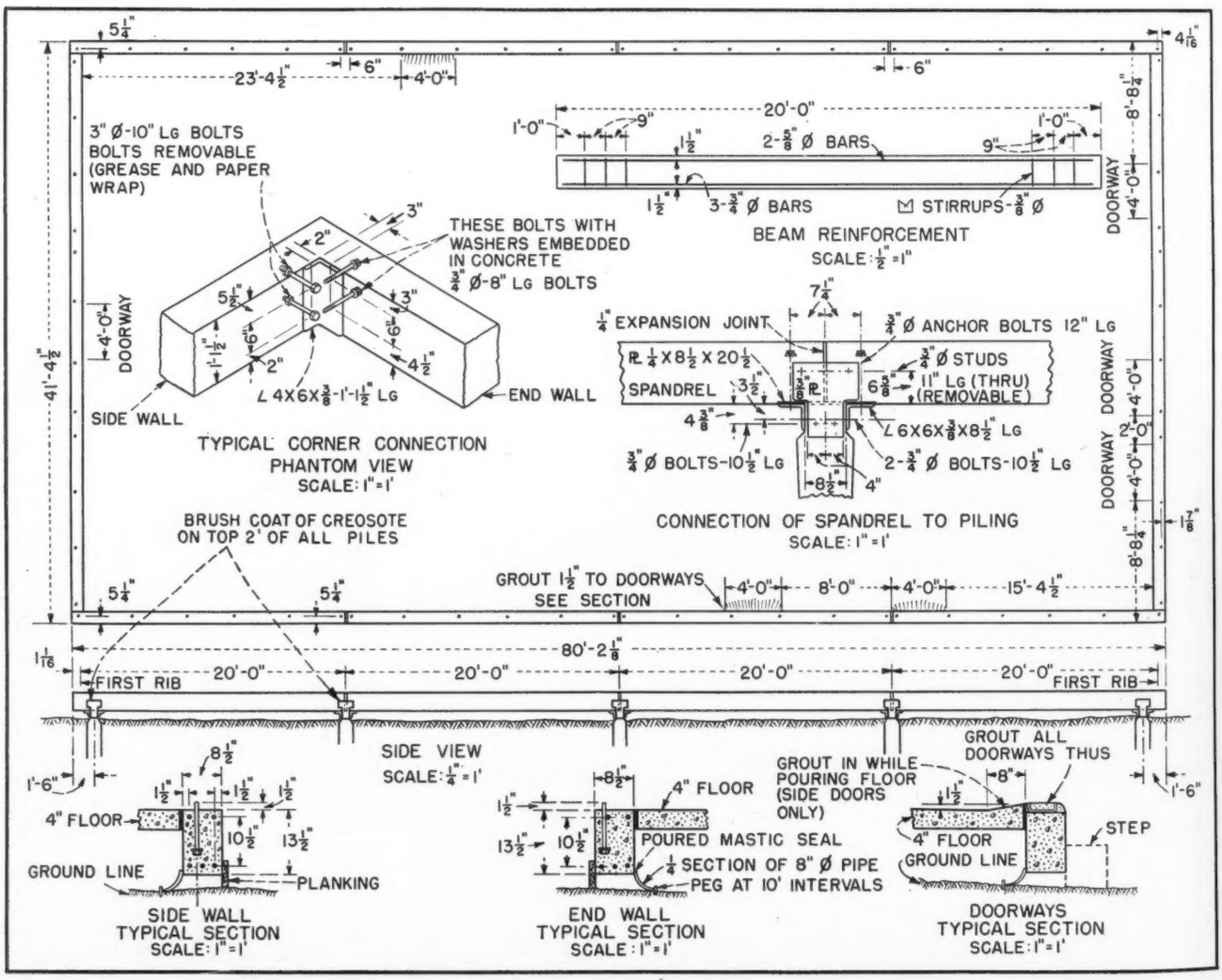
Corrosion Caused Trouble

Some of the area of the stack plates at the wrinkles were found to be badly corroded on the inside. The mortar evidently had not filled the space between the lining and the steel as intended. Acid had probably gotten into the hollow and caused local weakness. The brick lining did not seem to be greatly damaged. To avoid interfering with operations the lining was left as it was. If acid stains are detected in the future, more patches can be welded over the weak spots. The stiffeners alone are deemed to be adequate for all probable vertical loads.

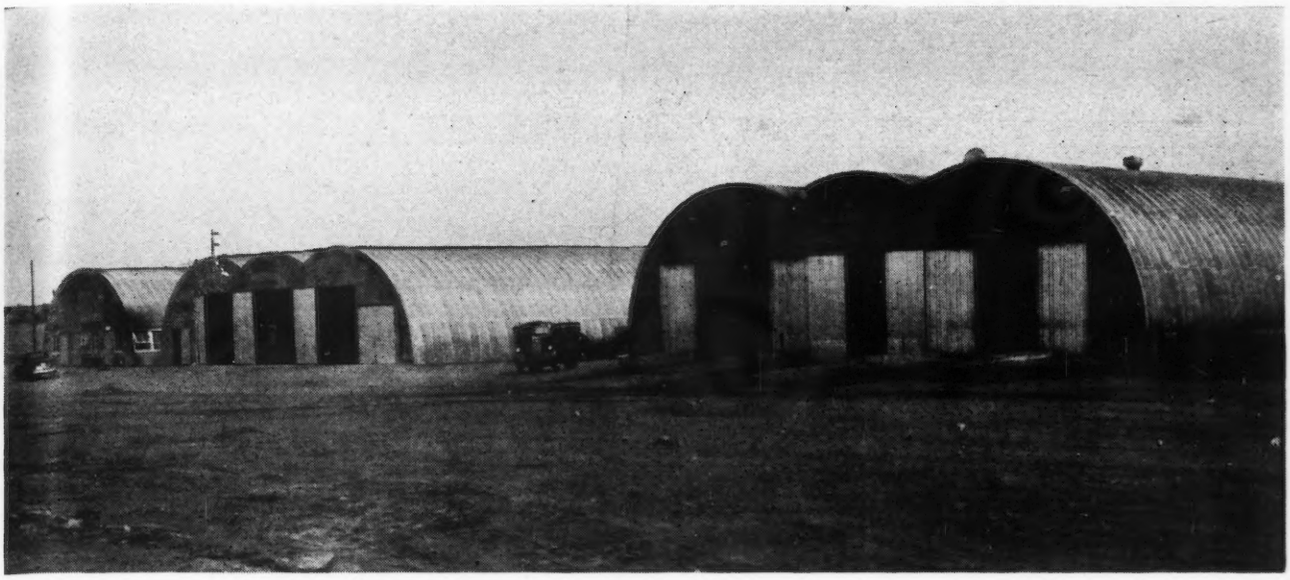
C. P. Love, mechanical superintendent for Andes Copper, at Potrerillos, supervised the repair work. The design work was done under the supervision of Wilbur Jurden, chief engineer of the Anaconda Copper Mining Co. Arthur L. Otto did most of the development and detail design studies under my general guidance. The steel work was fabricated by the Williams Equipment Co., of San Francisco, and shipped to South America.

SOUTH AGNEW office-and-dry building of Quonset type of construction. On the right is a corner of the warehouse.

Quonset Buildings Convenient



CONSTRUCTION DETAILS OF FOUNDATION OF OFFICE-AND-DRY BUILDING.



THE THREE BUILDINGS adjoin the new mine now being stripped by mammoth dragline and conveyor system described in E&MJ, Aug., 1948.

for Mine Use

FINDING IT NECESSARY to erect some buildings for offices and other purposes at its South Agnew mine, near Hibbing, Minn., on the Mesabi, Butler Brothers decided upon the Quonset type of structure. This type, shown in the photographs, consists essentially of fabricated steel arches covered with corrugated, galvanized sheets. Three such buildings were erected: one, 40x80 ft. in dimensions, for offices and dry; one, 80x80 ft., for a cold-storage warehouse; and the third, 80x100 ft. for a garage and shop. Only the first and third are insulated. These buildings are economical and, further, can readily be moved to another site, should this become necessary at any time in the future.

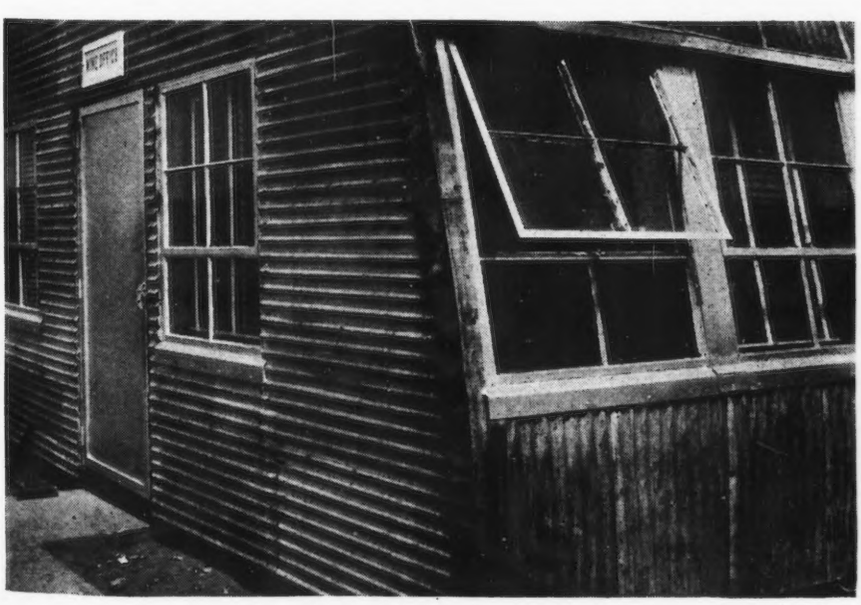
Because the site was fresh fill ground, all foundations were carried on wood piles, spaced 20 ft. c. to c. The foundation of the office and dry building consists of spandrel concrete beams, 8½x13½ in. in cross section, carried on these piles. The piles are set 8 ft. in the ground. The topmost 3 ft. of each pile is creosoted. The beams were used wherever possible to decrease the amount of concrete, this instead of the standard concrete foundation. Construction details are shown in the drawings. Space between beam and ground is sealed with planking.

Use of the beams was not practical in all cases, because of traffic, heavy equipment, and sublevel construction of a coal bin and boiler room. In the warehouse foundation, concrete beams on piling are used under the two side walls. Here the end walls are supported by spread footings on piling. For the shop and garage, the foundation consists of the spread footing on piling.

Erection of the first building (the office and dry) was accomplished by raising the arches with a crane. They were fastened together from a scaffolding in the usual manner. Before the third building was put up, a method had been developed whereby 20-ft. sections were pre-fabricated on the ground and put in position by a crane. Working thus, the framework for shop and garage was erected in seven hours with five laborers and a crane.

Satisfactory insulation was provided for the office-and-dry building and that containing the shop and garage. It consists of 2 in. of rock wool covered with 3/16-in. cement asbestos wallboard. The wallboard is kept in place by 1-in. steel strips nailed on the inside. The offices are heated with convection heaters consisting of steel tubes and fins.

Data and drawings presented were obtained through the courtesy of Earl S. Mollard, Butler Brothers.



OFFICE ENTRANCE CLOSE-UP OF SOUTH AGNEW.

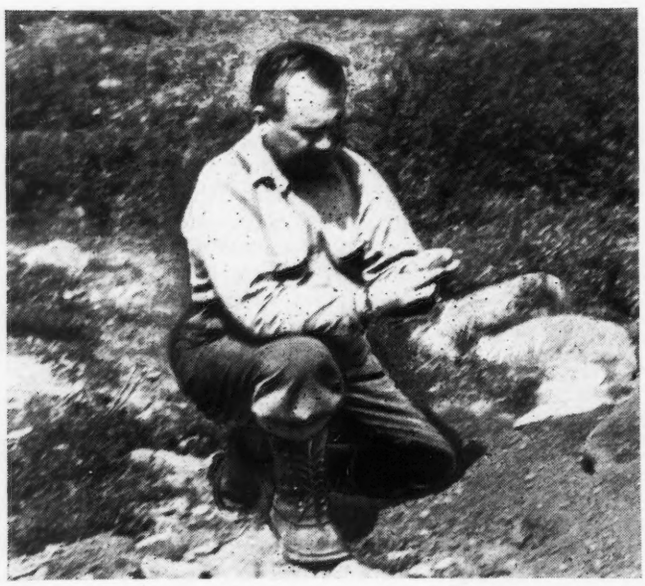
BURNT CREEK CAMP, headquarters and temporary base camp for Hollinger's iron ore exploration in Labrador and Quebec, in which M. A. Hanna Co. participates. It is home for administrative and technical personnel as well as for 75 to 80 workmen.

That Labrador Iron Ore

LABRADOR'S MUCH-DISCUSSED resource of iron ore now appears big enough, after long exploration, to justify the huge investment necessary to get the ore to market. Engineers had estimated that it would be safe to undertake the large-scale project if 300,000,000 tons of ore could be proved to be available for mining by open-pit methods. With the end of the 1948 season's test drilling and trenching, the needed tonnage is considered to have been exceeded. The deposits have been drilled to an average depth of 200 ft., with one exception. In it the drill was still in good ore at 350 ft. when stopped. The orebodies, or groups of deposits, are 15 or 16 in number. The deposits vary in width from 100 to 300 yd. and up to several thousand yards in length. All save one were located by their outcrops. Much evidence suggests the existence of an even greater tonnage than that now estimated.

R. E. Cochran, Cleveland editor, visited Labrador this summer. He has supplied the information on which the following is based:

The exploration companies that have disclosed the tonnage stated are two: Labrador Mining & Exploration Co. and Hollinger North Shore Exploration Co. The first has a concession of 20,000 sq. mi., the latter 3,900 sq. mi. The North Shore concession is wholly in Quebec. Both companies are subsidiaries of Hollinger Consolidated Gold Mines, Ltd. of Montreal. M. A. Hanna Co., iron ore operators of



DR. RETTY, chief geologist for Hollinger Consolidated in Labrador-Quebec area. He has been on the job every summer since 1936.

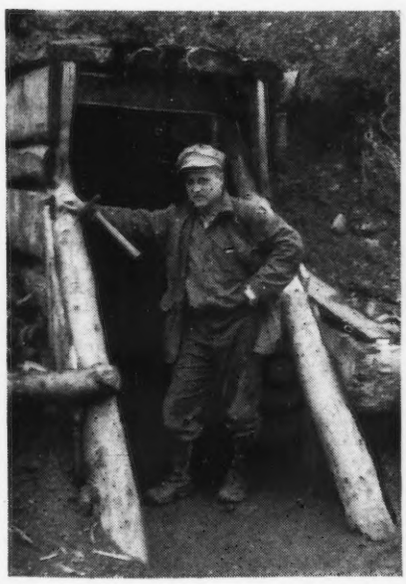
J. A. LITTLE, field manager of entire Labrador-Quebec development job for Hollinger. Beside him is his son, Johnny.

SURFACE TRENCHING, seen in foreground, marks the beginning of proving up an area. Diamond drilling or churn drilling follows, and then a shaft or adit. Here overburden is typical—about 20 ft. deep. It consists of decayed rock and boulders.

Cleveland, participate on a minority basis.

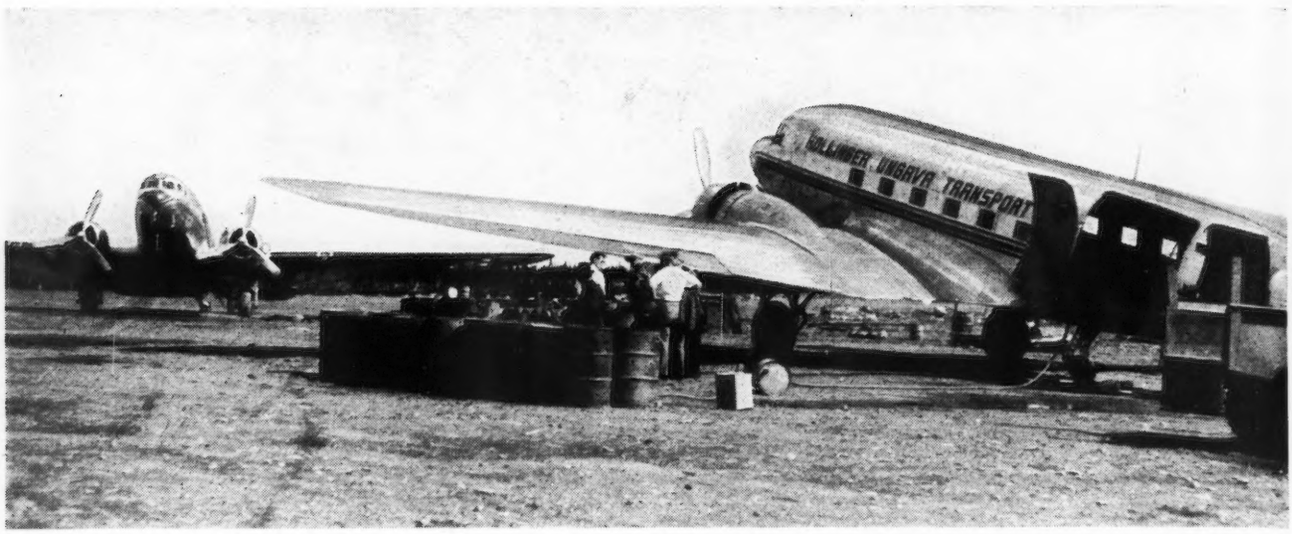
The orebodies disclosed occur in the so-called Ungava Trough, covering parts of Labrador and Quebec. This geologic structure extends from Ungava Bay on the northern coast southeastward 350 miles. In width it varies from 10 to 60 miles. In the area of the Trough, the boundary between Labrador and Quebec depends on the watershed, as yet ill-defined. Labrador's part drains to the Atlantic, Quebec's to Ungava Bay, Hudson Bay and the St. Lawrence.

Existence of iron formation in the Trough was reported 55 years ago. The first discovery of an ore

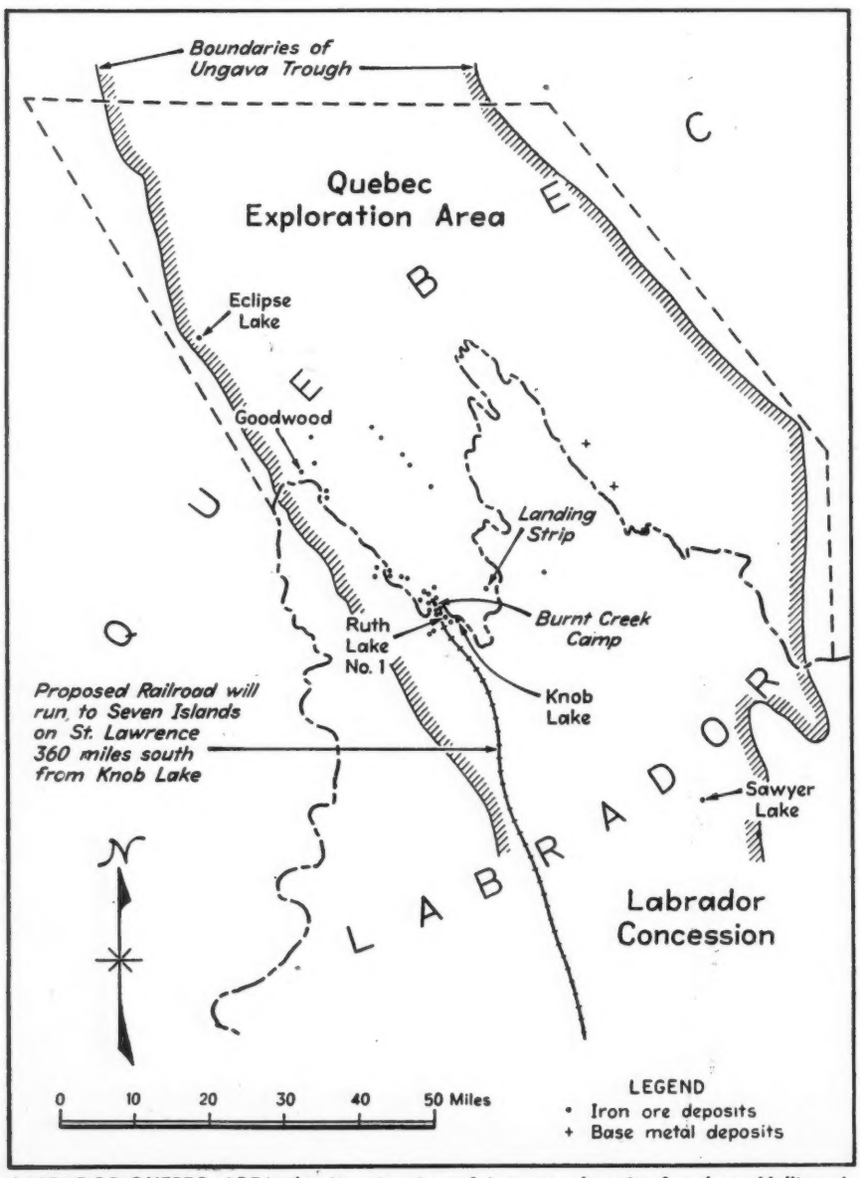


DR. A. E. MOSS is next in line to Dr. Retty in geological work in Labrador-Quebec area.

GOODWOOD outcrop. The figure is that of Dr. Retty. Two or three boulders of waste have slipped down slope. This orebody is largest of all those found, so far as known.



TWO DC-3 PLANES, operated by Hollinger Ungava Transport Co., ply between Seven Islands on Gulf of St. Lawrence and the Knob Lake landing strip. Beside the personnel, they bring all supplies needed for the exploration and development work.



LABRADOR-QUEBEC AREA showing situation of iron ore deposits found on Hollinger's huge concessions. The boundaries of the Ungava Trough are shown.

deposit was in 1929. A company organized for prospecting in Quebec found the Ruth Lake orebody—but it happened to be in Labrador. Exploration lagged until 1936. Then A. H. McKay, of Montreal, formed the Labrador company named, secured its big concession, started field work. He placed Dr. J. A. Retty, geologist, in charge. Retty has continued through a change in ownership and today is chief geologist for the two Hollinger subsidiaries.

Manager of the entire project for Hollinger is W. H. Durrell, wartime builder of Goose Bay airport. J. A. Little is field manager. Field headquarters are at Knob Lake, 320 miles by air north of the Gulf.

The Hollinger interests entered the picture in 1942. They took over McKay's Labrador company. The North Shore company was organized for prospecting the Quebec area. Field work was resumed. Hollinger was looking, however, for gold and the major non-ferrous metals. Showings of these had been found on the Trough's east slope. Once exploration began within the Trough and on its western flank, the new iron ore discoveries followed.

Retty had found a deposit at Sawyer Lake in 1937, in Labrador. In 1938 he had discovered another at Burnt Creek, in Quebec. Thus with the Ruth Lake deposit, the Hollinger-controlled companies already had three orebodies when they took over.

It was at this point that the Hollinger interests, headed by Jules R. Timmins, induced the Hanna company to join it in the venture. The

PONTOON-EQUIPPED PLANE services five outlying camps. It is permanently stationed at Knob Lake 3 miles from the landing strip. H. J. Gates, experienced bush pilot, flies it.

Tonnage and Analysis of Labrador-Quebec Iron Ore Proved to End of 1947

LABRADOR MINING & EXPLORATION CO.

	Bessemer	Non-Bessemer	Manganiferous
Tons	13,964,000	20,996,000	6,166,000
Iron	62.7	65.5	50.4
Manganese	0.021	0.66	8.14
Phos	0.030	0.145	0.174
SiO_2	8.11	4.92	5.61

HOLLINGER NORTH SHORE EXPLORATION CO., LTD. (QUEBEC AREA)

	Bessemer	Non-Bessemer	Manganiferous
Tons	47,177,000	40,464,000	11,111,000
Iron	61.9	57.6	52.1
Manganese	0.44	0.59	6.85
Phos	0.030	0.106	0.121
SiO_2	6.35	7.80	6.23

latter's experience with iron ore is a great asset. G. M. Humphrey, of Cleveland, heads the Hanna organization. With his associates, he has a desire for big-scale undertakings, a flair already well demonstrated.

By 1946 both Hollinger and Hanna were convinced they were about to uncover something spectacular in iron ore. Test drilling was stepped up. Sixty miles of roads were built to connect outlying camps to Burnt Creek headquarters. Harbor surveys were started at Seven Islands, 320 air miles south on the St. Lawrence Gulf. Two new Hollinger subsidiaries were set up—Ungava Power Co. and Quebec-North Shore & Labrador Railway.

All was set at the beginning of the 1948 season to prove the final 160,000,000 tons this summer. The field force of 180 men was flown in as soon as weather permitted. Four churn drills and six diamond drills were put to work.

The Sawyer Lake orebody is in the southwest corner of the Labrador concession. It is now regarded as small. Four holes have shown 10,000,000 tons. It is 50 miles from camp. Further drilling will await the railroad.

Almost in a straight line northwest from Sawyer Lake lie nine other occurrences. These are the Wishart, Knob Lake, Burnt Creek, Ferriman, Fleming, Sunny Lake, Kivivic, Leroy and Eclipse. To the east are the Trough, Bruin, Snow and Partington.

From the Eclipse, in the Quebec concession, to the Sawyer Lake, in the Labrador area, is 90 miles. The deposits being explored are within this area. Most of them are in the center 50 miles. All this spells something big.

The Burnt Creek group of six deposits contains 30,000,000 tons, conservatively estimated because the bottom of one deposit had not been reached at more than 350 ft. The surface shape of the deposits has been fairly well determined. The Ferriman has six deposits. It is estimated to contain about 35,000,000 tons.

The Fleming, with six known deposits, was to be further test-drilled the past summer. It is expected to show much more than the 16,000,000 tons estimated last year. At the Ruth Lake, six deposits have been located. Further drilling is expected to add considerably to the 28,000,000 tons already proven.

Also scheduled for drilling were the Wishart's two deposits and a newly discovered body, the Kivivic; likewise two at Sunny Lake.

The Biggest Thus Far

Two bodies hold promise of surpassing any yet uncovered—the Goodwood, about 30 miles north of Knob Lake, and the Eclipse, 20-odd miles beyond the Goodwood. Preliminary work on the Goodwood last year proved 18,400,000 tons. Before the test work is completed, Goodwood may reveal up to 80,000,000 tons. The Eclipse gives every indication of matching Goodwood.

On the known orebodies of the Goodwood, Hollinger has been doing geophysical work with the gravimeter and the magnetometer. Results will be used in a search later on for hidden deposits. Dr. A. A. Brant, Toronto, is consultant on this work. Results so far are inconclusive.

The iron formation is a member of a sedimentary series, much thrust-faulted. The deposits within it originally were deposited horizontally. Now the formation outcrops as vertical, or steeply-dipping, bands. It also appears as "folds" which ribbon the surface discontinuously. The Labrador-Quebec area resembles the Marquette.

As noted, the ore is a mixture of brown and blue ore. It is hematite in the main, with limonite bands. Some blasting may be necessary in mining, due to an occasional hard rib. Three distinct types are commonly found within 100 ft. A puzzle is the occurrence of very hard, boulder-like ore, having the same chemical properties as the surrounding soft ore. Moisture content is generally low. Ice granules were found, however, at 40 ft. depth in a shaft on one of the Ferriman deposits.

The field work has shown the constantly recurring sequence of limestone, chert, quartzite, slate and iron. Surface topography is no guide. The orebodies lie, or outcrop, on the slopes and occasionally in the valleys.

In test drilling, diamond drills are used to chop the ore, since its softness does not permit core sampling. Rods are cut at 45 deg. and hardened. Casing is used on all test holes. Electric blasting is required to break the ground so that casing can be driven.

Sludge samples are the only kind taken, with the diamond drills as

with the churn drills. The latter make between 80 and 100 ft. of hole per day. Diamond drills are expected to serve further in deepening the churn-drill holes when required.

Pressure for Deep Waterway

Should the deposits develop as it is hoped they will, construction of the St. Lawrence waterway would be justified. This is the present position of the M. A. Hanna Co., hitherto a waterway opponent. Hanna is said to have the support of at least one other Lake-ore operating company. Ore from Labrador will supplement present Lake Superior merchantable reserves. Thus it will be in competition with prospective taconite developments, of which one hears so much.

With the opportunity for developing hydro-electric power in this northern region, the possibilities of smelting part of the ore electrically are not being ignored. Hollinger is said to be interested in research along this line. Two processes, the Tysland-Hole and the Wiberg, have received attention. The product would be no further from market than the ore is now.

Under what conditions the ore is to be mined has not been determined. Only slight consideration has been given to possible government aid. So far, this has been limited to a grant of $100,000 from Quebec for building the Knob Lake landing strip. Outsiders have suggested that the big sums required for large-scale operation could quickly be provided with customer participation.

Extent of concessions must be whittled down considerably by holders when actual mining starts. Hollinger North Shore can retain but 300 sq. mi. of its holdings once it begins to move the ore. Out of the Labrador company's huge concession, it can select no more than 1,000 sq. mi. for mining, with the concession in effect for 90 years.

The rate of progress to be achieved in opening this ore to the outside world will depend upon several things. Questions of financing, world conditions, U. S. and Dominion politics, and the degree of need for the ore, all will play a part.

The ore is there, high grade in enormous tonnages, which may eventually dwarf the Lake Superior region. New deposits will be discovered in the Ungava Trough for years after actual mining starts. Right now there are no indications of a Hull-Rust mine, the famous deposit at Hibbing which contained well over 400,000,000 tons in itself. The hope of finding such a deposit has beckoned to Hollinger's geologists, clambering over the rocky hills and swampy valleys in this section of Labrador and Quebec—one of the oldest surfaces on the face of the earth, as well as one of the most forbidding.

For a quick analysis of iron, silica and manganese a full-scale laboratory has been set up at the headquarters camp.

To check drill results and investigate the characteristics of the ore, an adit was driven into each of two deposits in 1947. One was on the Ruth Lake deposit in Labrador and one in the Ferriman growth in Quebec. Each was driven about 100 ft. below the surface, and for about 150 ft. Sampling and other results were satisfactory.

It is reasonable to assume a large number of ore deposits are still to be discovered through surface outcrops. Vast portions of the two concessions remain to be prospected. On hundreds of square miles no white man has yet set foot.

Between Goodwood and Eclipse not even preliminary prospecting has been done. The possibilities of finding hidden orebodies also are great. It should be recalled that only a few of the 500-odd mines opened in the Lake Superior region resulted from discovery of surface outcrop.

Other Concessions

Do the ore occurrences stop at the north end of Hollinger North Shore's concessions? This is most unlikely. Along the 250-mile extension of the Trough beyond the North Shore's boundary, every foot is covered by concessions obtained by other companies. Directly northwest from the Hollinger limit is the 1,500-sq. mi. concession held by Norancon Exploration, Ltd. Northwest from this and abutting it is the 1,000-sq. mi. concession granted to Fort Chimo Mines, Ltd., a Frobisher subsidiary. Still further northwest is one of like area granted to the Quebec-Labrador Development Co. The 448-sq. mi. concession of the Fenimore Iron Mines overlaps, to some extent, the holdings of the last-named. Reconnaissance work was done on practically all of these concessions the past summer.

With the required tonnage of open-pit ore assured, the problems of mining and transportation are next in order. Their solution will inevitably be costly. To the end of 1948, $4,800,000 will have been spent on preliminaries. Much greater expenditures lie ahead. A quarter-billion dollars may be involved before any ore can be delivered on a commercial basis.

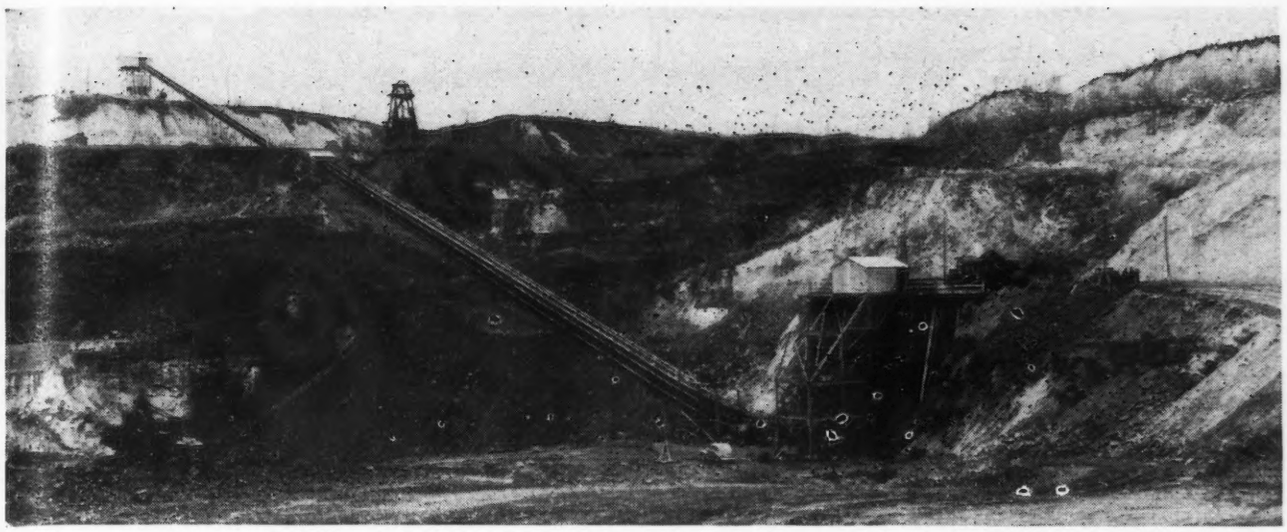
All factors considered, the scale of mining must be big. A minimum annual production of 10,000,000 tons is pondered. The region through which the railroad must go is uninhabited. Also required are a 50,000-hp. hydroelectric plant, ore-loading docks, a town at deep water, and another town in the mining area.

Railroad Will Be Costly

The cost of the 360-mile railroad is put at $100,000 per mile. To equip it will take 25 to 50 million more. Construction can be speeded by splitting up the contract. Right-of-way surveys were finished this summer. One large structure, a bridge and trestle, with a center span possibly 250 ft. long, will be needed. There will be at least one tunnel also, a mile or more long. Grade will be held to half of 1% in favor of the load with one exception. This will be over the 100 miles north of Seven Islands, on the Gulf, where the maximum will be 2%.

A means to get the ore from Seven Islands to market must also be found. In any case, at least five years will be required before any commercial ore can be delivered. The delivered cost will have to be competitive. Possible customers include Canadian and English furnaces and those in eastern and midwestern United States. Liverpool is 2,200 miles from Seven Islands, Baltimore 1,700 miles. To reach furnaces now supplied from Lake Erie ports with any considerable tonnage will call for deepening the present waterway.

The need at any U. S. furnace would have to be acute to bring ore by rail from Montreal, where deep water ends at present. The delivered cost to Pittsburgh might exceed $9, according to disinterested parties. Entering into this figure would be $1.50 for stripping and mining, royalty and taxes. Rail freight to Seven Island and dumping would be $3 more. Amortization of the new railway and dock would add $1, and water shipping to Montreal still another dollar. Rail freight to Pittsburgh at the new rate would be about $3.25. Against the big total would be the greater iron content of the ore, compared with Lake ores.



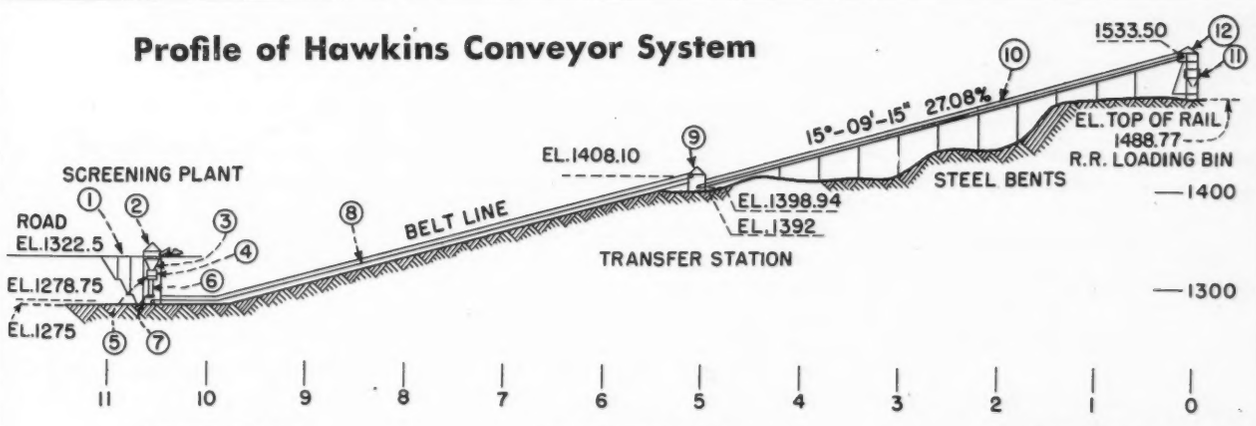
New Type of Conveyor Belt at Hawkins Mine

IN MAY OF THIS YEAR, the Cleveland-Cliffs Iron Co. put in operation a new belt-conveyor system 2,206 ft. long at its Hawkins open-pit mine at Nashwauk, Minn., on the Mesabi Range. The lift is 255 ft. Trucks deliver the ore to a screening plant in the pit, dumping into a drive-over pocket. From this, two flights of 30-in. belt, with a transfer station between, deliver it to a rail-road-loading bin on surface. The structures, conveyor bents and trusses are of steel. The belts used in this installation are 30 in. wide. Operating at 550 f.p.m., they haul 700 long tons per hour on an incline of 15°. 9′.

This is the first conveyor system on the Mesabi Range to be equipped with U. S. belting made from Ustex-Nylon. Ustex is a specially-treated cotton having high tensile strength. It is combined with Nylon in a weave pattern. This fabric increases permissible working tension 2½ times and permits the use of more plies.

To Oct. 1 this belt has hauled 1,-101,522 long tons of iron ore. The stretch of the belt has been under 1%. The troughing of the belt likewise has proven to be excellent.

Profile of Hawkins Conveyor System



SCREENING PLANT

1. One-way dump with timber approaches.
2. Control room.
3. Receiving hopper, capacity 60 tons.
4. Crude-ore apron feeder. Make Bathke. Motor 25-hp. Size, 60 in. x 15 ft. 9 in. Speed, 20 f.p.m.
5. Vibrating screen. Make, Pioneer Engineering Works. Size, 5x12 ft. Single-deck, 5-in. openings. Motor, 20 hp.
6. Surge pocket.
7. Apron feeder. Make, Bathke. Motor, 15 hp. Size, 48 in. x 11 ft. Speed, 20 f.p.m. Tail and snub pulleys, 30-in. Take-up weight, 3,600 lb.

BELT CONVEYOR NO. 1

8. Lower flight—Make, U. S. Rubber. Ustex-Nylon belt. Width, 30 in. Length, 1,154 ft. Construction, Ustex-Nylon. Six plies of special high-strength fabric. Envelope of conventional duck. Top cover, ¼ in., including breaker. Bottom cover, 1/16 in.
   Inclined length, 566 ft.
   Vertical lift, 129.35 ft.
   Belt speed, 550 f.p.m.
   Diameter of head pulley, 54 ft.
   Grade, 27.08%.
   Maximum capacity, continuous, 700 tons per hour.
   Motor, 150 hp.

TRANSFER STATION

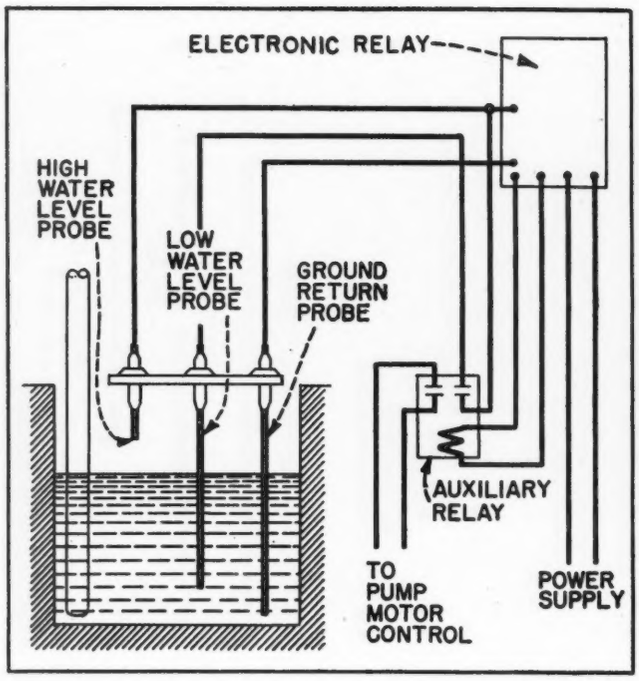
9. Transfer point. Motor, 150 hp. Gear drive. Take-up weight, 3,600 lb.

BELT CONVEYOR NO. 2

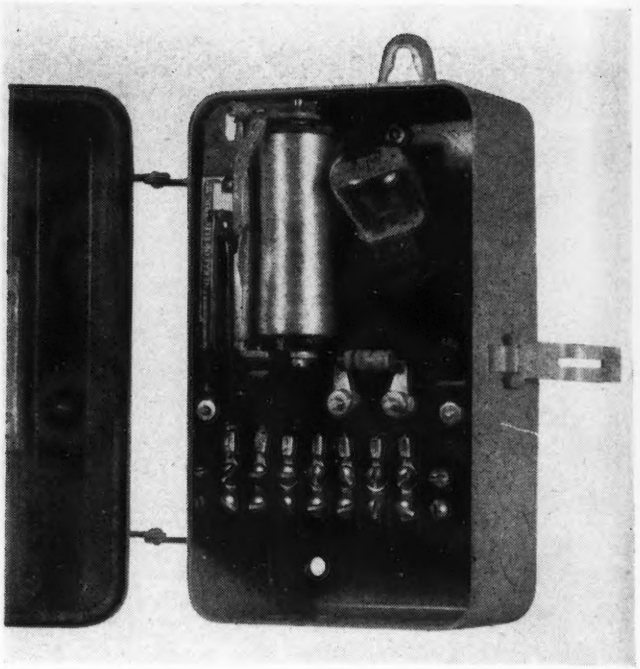
10. Upper flight—Same as belt No. 1 except for the following:
    Total length, 1,052 ft.
    Inclined length, 515 ft.
    Vertical lift, 134.56 ft.
    Head pulley, 54-in.

R.R. LOADING STATION

11. Bin-capacity, 305 tons.
12. Belt-driven with same equipment as at transfer station.



ELECTRONIC RELAY controls power supply from high-resistance contacts between various water-level probes and mine water sump.



AN ELECTRONIC RELAY such as discussed in text, with front cover open showing the various components.

Electronic Control Applied in Automatic Mine Pumping

Pioneering effort using it as basic element proved successful. Other equipment required is assembled from standard devices.

LESTER HANSON
Electrical Engineer
Eureka Corporation, Ltd.
Eureka, Nev.

W. B. CLARK
Industrial Division
General Electric Co.
Salt Lake City, Utah

PREPARATION for sinking the 3,000-ft. Fad shaft of Eureka Corporation, Ltd., at Eureka, Nev., where wartime drilling had revealed a large body of lead-zinc ore below the old workings, included making provision for pumping huge quantities of water. Even in this desert country, water in great quantities is certain to be encountered a few hundred feet underground. Volume of flow is limited only by the ground's porosity.

Pumping control had to be automatic if costs were to be held in line. Other automatic installations in service near Ely in the same state demonstrated that satisfactory automatic equipment could be assembled from standard control devices with the possible exception of the float switches. On previous automatic pumping jobs these had been the weakest part of the system, due to faulty operation caused by fouling of floats and corrosion of parts.

Decision was made that it would be desirable to work out a system whereby the water level indicating equipment for controlling the automatic pumping equipment could be outside the sump. This article will describe how an electronic water level indicator was developed to serve in place of float switches.

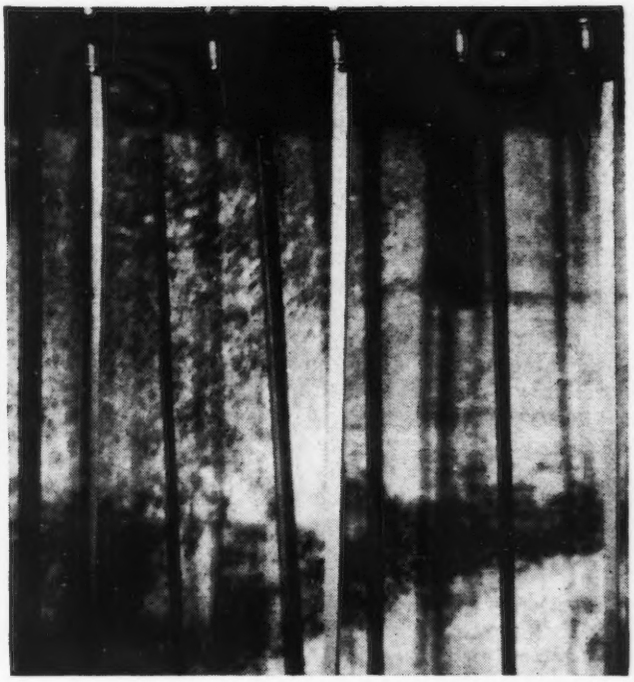
Study indicated that electronic relays looked most promising as the basic control unit because all the equipment, other than the liquid-level probe or electrode itself, could be located in the control cabinet, where operating conditions would be favorable.

The electronic relay is an electronic tube amplifier which operates an electromagnetic relay. This provides a simple means of controlling a power circuit from a very high-resistance contact such as that between a metallic electrode or probe and water. The minute current passed when the water contacts the probe connected to the input circuit is amplified by the electronic tube to a value which can reliably operate the electromagnetic relay which, in turn, can control the power circuit.

This ability of the electronic relay can be used in a liquid-level control, avoiding the use of any moving mechanical parts or electrical contacts in the tank or sump.

The Probes

To use the electronic relay as a water-level control or indicator, stainless-steel probes are connected to the input circuit and inserted in the tank or sump to the levels at



THE PROBES, of stainless steel, which are inserted in the sump to the levels at which the water is to give an indication, are here seen from the top, connected to the input circuit. An adjacent view shows the probes extending down into the sump from their supports above.

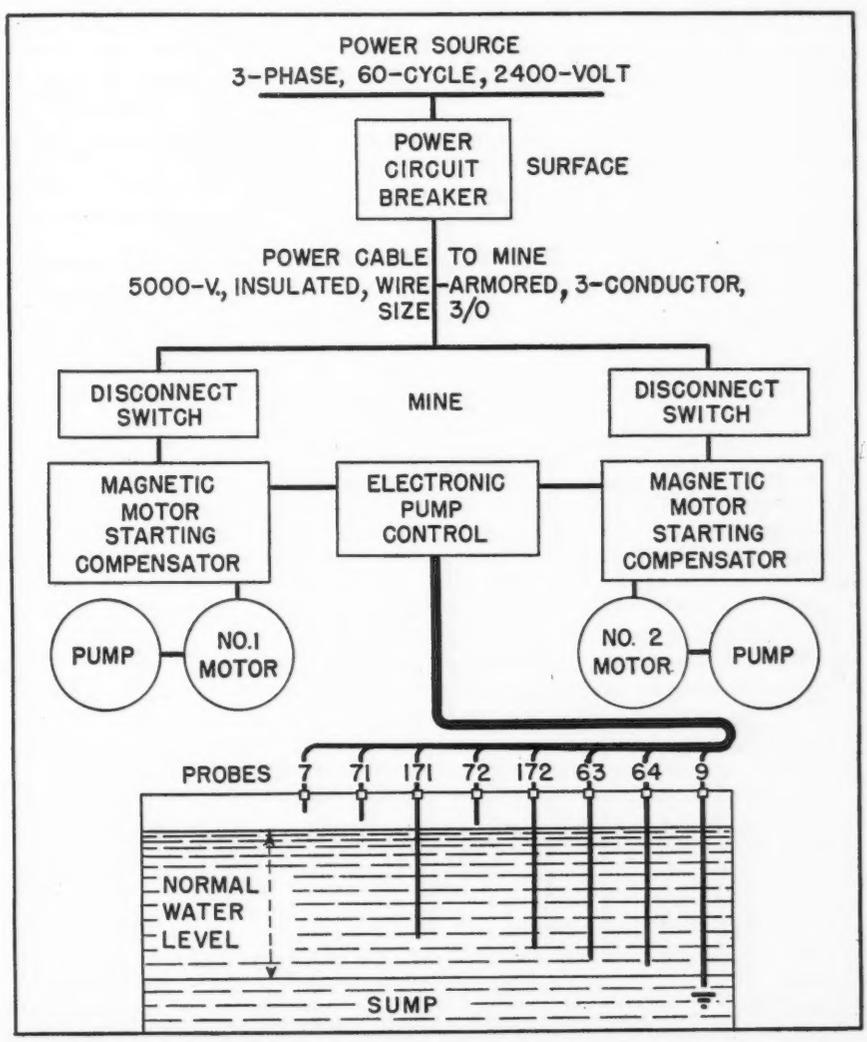
which the water is to give an indication.

When the water contacts the high-level probe, the electronic relay causes the auxiliary relay to close the circuit to the pumping control and at the same time seal in the electronic relay through the low-level probe. When the water leaves contact with the low-level probe the sealing circuit is broken, causing the electronic relay to de-energize the auxiliary relay which breaks the circuit to the pumping control.

To test this electronic relay as an equivalent for a float switch in underground conditions, one of these relays with its probe was set up underground and operated experimentally for a period under conditions similar to those expected in the automatic pumping. The test indicated that there was merit in considering using the electronic relay as the basic control unit in mine pumping.

Relay Is Decided Upon

Although there was still some misgiving as to how well the probes would continue to operate under the difficult conditions in the sump, decision was made to go ahead with the electronic control. An accompanying picture shows definitely the general conditions of installation of these probes on the 1700-ft. level of the mine. It will be observed that the wiring coming to



ELECTRONIC PUMP CONTROL, as installed in Fad shaft of Eureka Corporation, is illustrated schematically in this diagram.

these probes is done in the manner ordinarily followed in mines. The wire used is Flamenol, which is quite satisfactory for use under wet underground conditions. This assembly is exposed to dripping water and high humidity, as the plate is directly across the top of the sump. The probes have now been operating the automatic pumping equipment several months, and have established a splendid record of performance.

Some concern was felt as to the possibility of early tube failure in the electronic relays. Apparently these tubes are being worked in such a manner that their life is long, as no tube failures have been encountered. The equipment was designed so that in case of such a failure the equipment would fail safe.

Other pictures of the probes were taken in the sump itself. They show probes of various lengths, some only 2 or 3 in. long, since these are the ones which indicate maximum high-water level in the sump. It can be seen in the photograph shown on page 95 that no special precautions were taken in hanging the probes and their extensions in the sump.

The pumps are started when the water in the sump rises and makes contact with a probe. They are stopped when it is lowered to where it breaks contact with another probe.

Water Pumped Four Times

At present the water is relayed four times to get it to surface. From the shaft bottom the water is pumped to a sump on the 2250-ft. level, from here to 1700 ft., from 1700 to 800, and from the 800-ft. level to surface.

Each pump station is equipped with three 1000-gpm. centrifugal pumps. The pumps on the 800- and 1700-ft. levels are driven by 350-hp., 3600-rpm., 2300-v., 60-cycle, 3-phase induction motors; those on the 2250-ft. level by 250-hp. motors. A fourth pump will soon be installed at each station.

Reduced-voltage, magnetic, starting compensators are used to start the pump motors. They are controlled by electronic relays and auxiliary control to give the necessary protection to the equipment employed and insure continuous operation.

Each control cubicle, which contains the electronic and auxiliary relays, controls the operation of two pump motors. Each set of two pump motors is supplied with power from the surface by a size 3/0, 3-conductor, lead- and wire-armored cable suspended in the shaft.

How Control Functions

A schematic diagram of the wiring is shown. The operation of one of the electronic relay control cubicles controlling the operation of two pumps is as follows:

When the water in the sump rises and makes contact with probe 72, the first pump motor starts and continues to run until the water is lowered and breaks contact with probe 172, when it stops.

If the first pump cannot pump the water out as fast as it comes into the sump and the water rises and makes contact with probe 71, the second pump motor starts. The second pump continues to run until the water is lowered and breaks contact with probe 171, when it stops. The first pump to start may be either pump No. 1 or pump No. 2, depending on the position of a six-pole, double-throw selector switch. If this switch is in such a position that contacts No. 1 are closed, No. 1 pump will start first and No. 2 becomes a stand-by to help out when needed. If the switch is in the other position so that contacts No. 2 are closed, No. 2 pump will start first and No. 1 pump becomes the stand-by.

This alternation in the starting order permits equalizing the use of the pumps and also permits taking either pump off for inspection or servicing while the other remains under automatic control.

If the water continues to rise with both pumps running and makes contact with probe 7, an alarm bell and a red light in the power-house are energized. The bell rings continuously, indicating to the operator that there is trouble with the pumps and that they need attention.

Should the water in the sump be pumped down below probe 172 and for some reason the pump should continue to run, lowering the water until it breaks contact with probe 63, the control circuit to both pumps is opened by a contactor and either or both pumps (if running) should stop. When this happens the alarm comes on.

Now suppose the control equipment fails to disconnect the motor from the line. The pump continues to run until the water breaks contact with probe 64. Then the oil circuit breaker in the power house, feeding the cables to the pumps, is opened and the power to the pumps cut off. When the power is cut off the water is still well above the suction and there is no danger of the pump running dry and becoming damaged.

Each pump is provided with a pressure governor, which is bypassed by definite time relays, adjusted to give the pumps time to build up pressure. If a pump fails to build pressure in the given period of time, determined by the time relay, the pump motor is automatically stopped and the alarm sounded. If for some reason during the operation of the pumps a pump loses its priming and the pressure drops below where the pressure governor is adjusted, the pump motor is stopped and the alarm is given.

Other Relays

Other time relays are connected in the control circuits so that if the power fails during the operation of the pumps and then comes back, the pumps will start in their proper order with a time interval between the starting of each pump to allow it to come up to speed. The reason for such relays is to prevent all the pump motors from starting at the same time after a power failure, and overloading in the power supply system.

Should the overload relay in a starting compensator operate and stop the pump, the alarm is given.

Another relay operates a buzzer from a battery to remind repairmen not to leave the alarm line switch open, which would prevent any signals from coming into the power house.

The pumps may be operated either manually or automatically, depending on the position of the selector switches.

The alarm signal lights and bells may be located in any convenient place where there is an attendant at all times who can notify the proper personnel in case of trouble with the pumps.

As outlined, the equipment has been assembled from standard industrial control equipment and placed in service. It is being maintained by mine electricians who have had no previous experience with automatic pumping equipment.

The operating experience seems to have well demonstrated the wisdom of the original decision to pioneer in automatic mine pumping by using electronic control devices as the basic control element in the scheme.

MARKETS—Trends and Prices

Active Buying Movement in Major Metals Continues—Zinc Raised to 15½c., East St. Louis—Aluminum Higher

THOUGH INFLATIONARY PRESSURES have eased in agricultural commodities, textiles, and a number of manufactured products, the major non-ferrous metals throughout October remained quite active, with the trend in prices still upward. The E&MJ index of prices advanced from 178.26 in September to 179.58 in October, a new high. The advance resulted from higher monthly averages for Prime Western zinc, foreign silver, and aluminum. Antimony was advanced sharply early in the month, but this metal is not included among those that make up our index. With only a few exceptions, the demand for metals was such that buyers stood ready to absorb all available supplies. Rumors of even higher prices, reflected in part by the withholding of scrap, added to the buying fever. Tension over the European situation was a factor.

Stockpile meetings took place in Washington at which producers maintained that the Government should strive to acquire the tonnages of copper, lead, and zinc called for under the present plan by direct negotiation on an individual company basis. A quota or set-aside system for obtaining these metals for the stockpile would hardly be practicable under prevailing strained market conditions. Just what officials of the Department of Commerce intend to do about the program is not known. In reference to lead, another meeting has been scheduled for early November.

Copper Consumption Up

Figures released during the last month by the fabricating division of the copper industry indicate that consumption of refined copper increased to 126,486 tons in September, which contrasts with 115,036 tons in August and the low for the year to date of 103,738 tons in July. During the first nine months of 1948 the total quantity consumed by the industry was 1,058,125 tons, which compares with 1,000,641 tons in the Jan.-Sept. period of 1947. Stocks of refined copper in the hands of wire and brass mills at the end of September amounted to 394,917 tons, against 398,211 tons a month previous and 426,423 tons a year ago. Unfilled orders on the books of fabricating companies as September ended involved the equivalent of 329,811 tons of refined copper, against 346,564 tons a month ago and 387,903 tons a year ago.

Stocks of refined copper in the hands of producers reporting to Copper Institute at the end of September totaled 228,621 tons. With deliveries by the same group of domestic and foreign producers averaging more than 190,000 tons a month, the supply situation is generally viewed as too tight for comfort. A strike at an important property, or prolonged transportation difficulties could easily upset the market. In fact, toward the end of October the domestic industry was upset when a walkout of 311 locomotive engineers and firemen shut down operations at the Bingham Canyon mine of Kennecott. A strike of long duration would remove at least 18,000 tons of copper a month from the market and this might easily force another upward revision in the price. With the call for copper straining all facilities, some consumers, to play safe, were willing to purchase the metal at so-called premium prices. However, throughout October the domestic market was unchanged on the basis of 23½c. per pound, Connecticut Valley.

Foreign business in copper improved, stimulated in part by the Marshall Plan. The price structure abroad remained firm at the equivalent of 23½c. per pound, f.a.s. New York. The sales volume in foreign copper might easily have been greater in the event that producers cared to take on additional commitments for next year. Inquiry from abroad called for copper for shipment well into 1949.

Rise in Lead Expected

End of the work stoppage in the Lead Belt of Missouri did bring out larger supplies from that source, but the gain was offset to some extent by a strike of dock workers on the Pacific Coast that diminished the flow of concentrates from foreign centers consigned to smelters in that area. Talk of a higher price for November was so general that consumers naturally looked around for any metal that could be obtained from either primary or secondary sources. Smelters situated abroad outbid domestic buyers in the ore market because they found that the metal could be sold here and elsewhere at a premium over the 19½c. basis named by principal sellers in New York.

(Effective Nov. 1, the American Smelting & Refining Co. advanced its quotation for common lead to the basis of 21½c., New York. On the same day St. Joseph Lead Co. advanced its selling basis to 21.30c., St. Louis.)

Imports of refined lead during August amounted to 21,111 tons, of which Canada supplied 3,750 tons; Mexico 10,107 tons; Peru 2,080 tons; Belgium 471 tons; Italy 250 tons; Netherlands 114 tons; Yugoslavia 408 tons; Australia 3,860 tons; and other countries 101 tons. Imports of refined lead in the Jan.-Aug. period of the current year totaled 135,450 tons. From present indications the imports of refined lead for 1948 are expected to top 200,000 tons.

Zinc Advanced to 15½c.

On Oct. 18 an important producer sold Prime Western zinc on the basis of 15½c. per pound, East St. Louis, or one-half cent above the quotation that obtained up to that time. In view of the fact that most producers were either well sold up or had switched to selling on an average price basis or price prevailing on date of shipment, there was nothing to do but follow the rise. The move, more or less unexpected at this time, resulted in part from increased competition from European smelters for foreign zinc concentrate.

Effective Oct. 23, Eagle-Picher established its Central Mill settlement basis on zinc concentrate produced in

Copper Statistics

The following summary of copper statistics reported by members of the Copper Institute embraces the operations of the group in the United States as well as outside of this country. Deliveries in the United States include both domestic and foreign origin (duty free) metal. Figures are in short tons.

	April	May	June	July	August	Sept.
UNITED STATES						
Crude production:						
Primary	76,728	76,813	78,335	74,222	72,953 (a)	72,812
Secondary	12,013	15,006	9,343	7,251	16,212 (a)	15,259
Refined production	104,044	104,524	105,221	107,014	102,798	102,976
Deliveries, refined	116,475	113,389	112,677 (a)	108,527 (a)	107,496 (a)	123,188
Stocks, refined	67,257	72,791	72,315 (a)	79,277 (a)	79,579 (a)	72,215
OUTSIDE UNITED STATES						
Crude production:						
Primary	102,598	112,969	110,768	105,437	107,619 (a)	95,334
Secondary	712	1,242	671	856	738	825
Refined production	88,237	92,744	91,796	86,270	96,691	83,448
Deliveries, refined	86,612	76,826	70,753	87,287	78,039 (a)	74,083
Stocks, refined	150,236	152,416	160,129	147,387	160,539	156,406

(a) Corrected figures.

the Tri-State district at $98 per ton, basis 60% zinc. The previous settlement basis was $95 per ton.

Slab zinc production in the United States in September amounted to 60,990 tons, with deliveries (domestic, export, and Government account) totaling 68,850 tons. Stocks of slab zinc in the hands of producers declined from 45,246 tons at the end of August to 41,117 tons at the end of September.

The Aluminum Company of America advanced its price of virgin 99% aluminum 1c. per pound, effective Oct. 11. This establishes the market at 17c. per pound for ingot. Higher costs were given as the reason for the rise.

Output of primary aluminum in August totaled 54,953 tons, which compares with 52,937 tons in July, the Bureau of Mines reports. With the exception of the postwar record of 55,450 tons established last May, August production was greater than in any month since August, 1944. Unofficial figures place production for September at around 53,000 tons. Imports of virgin aluminum in August totaled 6,951 tons, mostly from Canada.

Antimony advanced from 35c. per pound, in bulk, f.o.b. Laredo, Texas, to 38½c., effective Oct. 8. The supply has been below requirements for some time and ore buyers have been paying higher prices. The rise in the ore market, along with higher operating costs, brought on the upward revision in the price of the metal. Those in the industry who had entertained optimistic ideas on the Chinese situation have been disappointed.

Climax Molybdenum Co. announced during October that it will raise its prices approximately 18%, effective Jan. 1, 1949. It was stated that "alarming cost increases in recent years has made it necessary to increase prices." New prices on some of the company's products, with current quotations in parentheses, in cents per pound of Mo, follow: Molybdic oxide briquettes 95c. (80c.); Calcium molybdate 96c. (80c.); Ferromolybdenum $1.10 (95c.); Molydenite concentrate 90c. (75c.). Prices f.o.b. Langeloth, Pa.

Supply and demand in silver appeared to be in balance until late in the month. The New York Official quotation declined from 77½c. an ounce troy to 74¾c. over the last three trading days of October. Offerings from foreign sources increased.

Quicksilver was firmer on spot.

Major Metals

U. S. DAILY AND AVERAGE PRICES

1948 Oct.	Electrolytic Copper (a) Domestic	(b) Export	Straits Tin New York	Lead New York	Lead St. Louis	Zinc East St. Louis
1	23.200	23.425	103.000	19.500	19.300	15.000
2	No Market	23.425	103.000	19.500	19.300	15.000
4	23.200	23.425	103.000	19.500	19.300	15.000
5	23.200	23.425	103.000	19.500	19.300	15.000
6	23.200	23.425	103.000	19.500	19.300	15.000
7	23.200	23.425	103.000	19.500	19.300	15.000
8	23.200	23.425	103.000	19.500	19.300	15.000
9	No Market	23.425	103.000	19.500	19.300	15.000
11	23.200	23.425	103.000	19.500	19.300	15.000
12	Holiday	23.425	Holiday	Holiday	Holiday	Holiday
13	23.200	23.425	103.000	19.500	19.300	15.000
14	23.200	23.425	103.000	19.500	19.300	15.000
15	23.200	23.425	103.000	19.500	19.300	15.000
16	No Market	23.425	103.000	19.500	19.300	15.000
18	23.200	23.425	103.000	19.500	19.300	15.500
19	23.200	23.425	103.000	19.500	19.300	15.500
20	23.200	23.425	103.000	19.500	19.300	15.500
21	23.200	23.425	103.000	19.500	19.300	15.500
22	23.200	23.425	103.000	19.500	19.300	15.500
23	No Market	23.425	103.000	19.500	19.300	15.500
25	23.200	23.425	103.000	19.500	19.300	15.500
26	23.200	23.425	103.000	19.500	19.300	15.500
27	23.200	23.425	103.000	19.500	19.300	15.500
28	23.200	23.425	103.000	19.500	19.300	15.500
29	23.200	23.425	103.000	19.500	19.300	15.500
30	No Market	23.425	103.000	19.500	19.300	15.500
AVERAGES FOR MONTH						
Oct.	23.200	23.425	103.000	19.500	19.300	15.240
AVERAGES FOR WEEK						
Oct.						
6	23.200	23.425	103.000	19.500	19.300	15.000
13	23.200	23.425	103.000	19.500	19.300	15.000
20	23.200	23.425	103.000	19.500	19.300	15.250
27	23.200	23.425	103.000	19.500	19.300	15.500
CALENDAR WEEK AVERAGES						
Oct.						
2	23.200	23.425	103.000	19.500	19.300	15.000
9	23.200	23.425	103.000	19.500	19.300	15.000
16	23.200	23.425	103.000	19.500	19.300	15.000
23	23.200	23.425	103.000	19.500	19.300	15.500
30	23.200	23.425	103.000	19.500	19.300	15.500

Silver, Gold and Sterling

DAILY AND AVERAGE PRICES

1948 Oct.	Sterling Exchange "Checks"	Silver (c) New York	Silver London	Gold London	Gold (d) United States
1	402.750	76.500	46.500d.	172s. 3d.	$35.00
2	(e)	(e)	(e)	(e)	35.00
4	402.750	77.000	46.500d.	172s. 3d.	35.00
5	402.750	77.250	47.000d.	172s. 3d.	35.00
6	402.750	77.500	47.000d.	172s. 3d.	35.00
7	402.750	77.500	47.000d.	172s. 3d.	35.00
8	402.750	77.500	47.000d.	172s. 3d.	35.00
9	(e)	(e)	(e)	(e)	35.00
11	402.750	77.500	47.000d.	172s. 3d.	35.00
12	Holiday	Holiday	47.000d.	172s. 3d.	Holiday
13	402.750	77.500	47.000d.	172s. 3d.	35.00
14	402.750	77.500	47.000d.	172s. 3d.	35.00
15	402.750	77.500	47.000d.	172s. 3d.	35.00
16	(e)	(e)	(e)	(e)	35.00
18	402.750	77.500	47.000d.	172s. 3d.	35.00
19	402.750	77.500	47.000d.	172s. 3d.	35.00
20	402.750	77.500	47.000d.	172s. 3d.	35.00
21	402.750	77.500	47.000d.	172s. 3d.	35.00
22	402.750	77.500	47.000d.	172s. 3d.	35.00
23	(e)	(e)	(e)	(e)	35.00
25	402.750	77.500	47.000d.	172s. 3d.	35.00
26	402.750	77.500	47.000d.	172s. 3d.	35.00
27	402.750	77.500	47.000d.	172s. 3d.	35.00
28	402.750	76.250	47.000d.	172s. 3d.	35.00
29	402.750	74.750	46.500d.	172s. 3d.	35.00
30	(e)	(e)	(e)	(e)	35.00
AVERAGES FOR MONTH					
Oct.	402.750	77.213	46.929	——	$35.00
AVERAGES FOR WEEK					
Oct.					
6	402.750	76.950	——	——	
13	402.750	77.500	——	——	
20	402.750	77.500	——	——	
27	402.750	77.500	——	——	

Calendar week averages: New York Silver: Oct. 2nd, 76.050; 9th, 77.350; 16th, 77.500; 23rd, 77.500; 30th, 76.700.

(e) Not quoted (Saturday).

THE above quotations for major non-ferrous metals are our appraisal of the important United States markets, based on sales reported by producers and agencies. They are reduced to the basis of cash, New York or St. Louis. All prices, except gold and silver, are in cents per pound.

(a) Net prices at refineries on Atlantic seaboard. To arrive at the delivered New England basis add 0.300c. per pound, the average differential for delivery charges.

(b) Our export quotation for copper reflects prices obtaining in the open market and is based on sales in the foreign market reduced to the f.o.b. refinery equivalent, Atlantic seaboard. On f.a.s. transactions we deduct 0.075c. for lighterage, etc., to arrive at the f.o.b. refinery quotation.

Copper, lead and zinc quotations are based on sales for both prompt and future deliveries; tin quotations are for prompt delivery only.

Quotations for copper are for the ordinary forms of wirebars and ingot bars; cathodes are sold at a discount of 0.125c. to 0.15c. per pound.

Quotations for zinc are for ordinary Prime Western brands. Zinc in New York commands a premium over the St. Louis basis equal to the freight differential. Contract prices for High Grade zinc delivered in the East and Middle West in nearly all instances command a premium of 1c. per pound over the current market for the Prime Western but not less than 1c. over the *Engineering and Mining Journal's* average quotation for Prime Western for the previous month; the premium on Special High Grade in most instances is 1¼c.

Quotations for lead are for common lead. Corroding lead commands a premium of 10 points.

(c) Determined by Handy & Harman on the basis of market prices for bar silver, in cents per troy ounce .999 fine, in amounts of 50,000 oz. or more, nearby delivery, New York. Price quoted is in cents and one-eighth cent fractions and is usually about one-quarter cent below the market to allow for delivery, carrying, and marketing. In addition to foreign silver, the quotation also applies to domestic and Treasury silver if such silver enters into the market. The Treasury's purchase price of newly mined domestic silver 90.5c. per troy ounce 1000 fine, effective July 1, 1946. London silver in pence per troy ounce, basis .999 fine.

(d) U. S. Treasury's gold price. Actual payment by the United States Treasury for gold is at 99.75 per cent of the price quoted by the Treasury, which is equal to $34.9125.

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MARKETS—Trends and Prices

Miscellaneous Metals

(Monthly Averages)

Average prices of miscellaneous metals for September and October:

	Sept.	Oct.
Quicksilver, N. Y., flask...	75.040	76.000
Antimony (a)	38.170	40.830
Antimony, bulk, Laredo...	35.000	37.660
Antimony, in cases, Laredo	35.500	38.160
Antimony, Chinese (b)...	....	....
Platinum, oz. troy	93.000	93.000
Cadmium (c)	190.000	190.000
Cadmium (d)	195.000	195.000
Cadmium (e)	200.000	200.000
Aluminum, ingot	16.000	16.680
Magnesium, ingot	20.500	20.500

(a) New York, packed in cases, in lots of 5 tons or more but less than a carload. (b) Nominal. (c) Producer's price for commercial sticks. (d) Average producers' and platers' quotations. (e) Special shapes sold to platers.

E. & M. J. Weighted Index of Non-Ferrous Metal Prices

(100 is composite for 1922-3-4. Copper, Lead, Zinc, Tin, Silver, Nickel, Aluminum)

1938.....73.67		1943..... 88.74	
1939.....77.71		1944..... 88.74	
1940.....79.22		1945..... 90.86	
1941.....83.49		1946.....110.06	
1942.....86.80		1947.....149.46	
	1946	1947	1948
January	96.42	140.88	154.20
February	96.42	140.42	155.63
March	96.42	150.71	155.63
April	96.42	153.14	160.67
May	96.42	154.03	161.33
June	107.16	150.05	162.30
July	117.11	148.73	164.55
August	113.32	149.35	177.68
September ...	113.32	150.80	178.26
October	114.25	151.05	179.58
November ...	131.23	151.92	....
December	142.19	152.48	....

Official London Prices

Since Dec. 18, 1939, the British Ministry of Supply has named maximum delivered prices for the major non-ferrous metals. Delivered prices for consumers in the United Kingdom effective Oct. 1, 1948, follow:

	Per Long Ton		
COPPER:	£	s.	d.
Electrolytic, high conductivity	140	0	0
Fire refined, high conductivity	140	0	0
Fire refined, high grade	139	10	0
Fire refined, min. 99.2 percent	139	0	0
Fire refined, min. 99.7	138	10	0
Hot rolled black wire rods	146	0	0
LEAD:			
Soft, foreign, duty paid	112	0	0
Soft, Empire	112	0	0
English refined	113	10	0
ZINC:			
Foreign (G.o.b.), duty paid	92	0	0
Domestic (G.o.b.)	92	0	0
Prime Wester nand debased	92	0	0
Refined and electrolytic	92	15	0
Minimum 99.99 percent	94	5	0
TIN:			
Ingot, 99 percent	569	0	0

Miscellaneous Metals, Ores, Minerals

Quotations cover wholesale lots, prompt shipment, f.o.b. New York unless otherwise stated

MISCELLANEOUS METALS

(Oct. 30, 1948)

Aluminum, ingot, 99 plus percent, lb. (base price)	17c.
Antimony, spot, lb., 5 tons and up but less than carload, in cases	41.67c.
Bismuth, ton lots, lb.	$2.00
Cadmium, commercial sticks, lb.	$1.90
Calcium, lb., ton lots, 98 percent, cast	$1.95
Chromium, 97 percent grade, lb., spot	$1.02
Cobalt, 97 to 99 percent, per lb.	$1.65
Indium, troy oz.	$2.25
Nickel, electrolytic cathodes, lb., f.o.b. Port Colborne (a)	40c.
Magnesium, 99.8 percent, carloads, lb., producer's plant	20½c.
Palladium, troy oz.	$24.00
Platinum (Official quotation wholesale lots), troy oz.	$93.00
Quicksilver, flask of 76 lbs., 25 flasks or more	$76.00
Selenium, 99.5 percent, lb.	$2.00
Silicon, minimum 97 percent, spot, carloads, lb.	16.50c.
Tellurium, lb.	$1.75 nom.
Thallium, 100 lb. or more, lb.	$15.00
Titanium, 96 to 98 percent, lb.	$5.00@$6.00

(a) Includes U. S. duty.

METALLIC ORES

Beryllium Ore, 10 to 12% BeO, f.o.b. mine, per unit	$24.00@$26.00
Chrome Ore, per long ton. f.o.b. cars Atl. ports, dry 48% Cr_2O_3, 2.8 to 1 ratio	$34.00@$35.00
48% Cr_2O_3, 3 to 1 ratio	$38.00@$42.00
Iron Ore, Lake Superior, Lower Lake ports, long ton:	
Old Range bessemer	$6.60
Mesabi bessemer	$6.35
Old Range non-bessemer	$6.45
Mesabi, non-bessemer	$6.20
Lead (Galena), 80 percent, Joplin, Mo., ton	$257.37
Manganese Ore—Per long ton unit of Mn. basis 48 percent manganese, subject to premiums and penalties, f.o.b. cars Atlantic and Gulf ports, duty paid, 70.6@72.6c. Prices nominal.	
Molybdenum Ore, 90%, per lb. of MoS_2 f.o.b. mines	45c.
Tantalite, 60% concentrate, per lb.	$2.00@$2.75
Tungsten Ore, per unit of WO_3:	
Foreign, 60 percent, duty paid	$24.00@$24.75
Domestic, scheelite, 60 percent and upward	$28.50
Vanadium Ore, per lb. of contained V_2O_5 f.o.b. mines	27½c.
Zinc Ore, Prime, 60 percent concentrate, Joplin, Mo., per ton	$98

METALLIC COMPOUNDS

Arsenious Oxide (arsenic trioxide) lb., in bbl., carload lots, delivered	6¼c.
Cobalt Oxide, 70 to 71 percent, lb., ceramic grade	$1.27@$1.30
Copper Sulphate, 100 lb.	$8.10

ALLOYS

Beryllium Copper, 4 percent Be, per lb. of contained Be	$20.50
Ferrochrome, 65 to 69 percent, per lb. of Cr contained	18.60c.
Ferromanganese, 78 to 82 percent, gross ton, seaboard	$160.00
Ferromolybdenum, 55 to 65 percent Mo, lb. of Mo, contained	95c.
Ferrosilicon, 50 percent, per lb. of contained Si	10.5c.
Ferrotungsten, 75 to 80 percent, lb. of W contained	$2.25
Ferrovanadium, per lb. of V delivered	$2.90
Silicomanganese, 1¼ percent C, per lb. contracts	8.6c.
Spiegeleisen, per long ton, 19@21%	$62.00

NON-METALLIC MINERALS

Asbestos, f.o.b. Canada (Quebec) mines (U. S. funds), ton:	
Crude No. 1	$896@$960
Crude No. 2	$350@$545
Spinning fibers	$204@$378
Paper stock	$51@$78
Shorts	$24@$46
Vermont, f.o.b. Hyde Park:	
Shingle stock	$97.00@$107.00
Paper stock	$68.50@$85.00
Waste	$51.00
Refuse or shorts	$25.50@$46.50
Barytes, f.o.b. mines:	
Georgia, crude, per long ton	$11.50@$12.00
Missouri, 93 to 94 percent $BaSO_4$, per short ton	$9.00@$9.25
Bauxite, long ton:	
Domestic, crude, 50 to 52 percent (not dried)	$4.00@$5.00
Domestic, chemical, 55 to 58 percent	(a)$8.50@$9.00
Domestic, abrasive, 80 to 84 percent	$17.50@$18.50
China Clay, f.o.b. mines, ton:	
South Carolina and Georgia, No. 1, airfloated, bulk	$8.00@$9.00
North Carolina, ceramic grade	$18@$22
Feldspar, bulk ton:	
Potash feldspar, 200 mesh	$17.00
Glass spar, white, 20 mesh	$11.75@$12.50
Fluorspar, f.o.b. mines, bulk, Kentucky and Illinois, 70 percent, all rail movement, ton	$37.00
Acid 97.5 and 1 percent, bulk, ton	$44.00
Fuller's earth, f.o.b. Georgia or Florida, ton	$7.00@$14.00
Magnesite, per ton dead-burned, f.o.b., bulk, Washington	$31
Mica — Domestic f.o.b. mines. Punch, 12 to 18c. per lb. according to size and quality. Sheet, clear, 1½ x 2 inch, 60 to 65c.; 2 to 2 inch, 95c. to $1; 2 x 3 inch, $1.35; 3 x 3 inch, $1.80; 3 x 4 inch, $2.25; 3 x 5 inch $3.; 4 x 6 inch, $4; 6 x 8 inch, $6. Wet ground, very fine, $135@$175 per ton. Bulk sales, dry ground, $40@$80 per ton. Scrap, $25 and up.	
Ocher, Georgia, ton, in sacks	$24.00
Pyrites, Spanish, per long ton unit of S, cif. Atlantic ports	(a)12@14c.
Sulphur, Texas, mines, long ton	$16.00@$18.00
Talc, f.o.b works, ton:	
New York, purified	$18.50@$20.00
Vermont, extra white	$12.50
Tripoli, Missouri, ton:	
40 mesh, cream colored	$14.50

(a) Nominal.

IRON AND STEEL

Pig iron, Valley furnaces, gross ton: Basic	$46.00
Steel, f.o.b., Pittsburgh billets, net ton	$59.00
Structural shapes, 100 lb.	$3.25

WASHINGTON REFLECTIONS

McGraw-Hill Washington News Bureau

ECA Cites Incentives For Foreign Investments

Mining industry members are studying new incentives for investment of private U. S. capital in foreign mining projects as outlined by ECA officials in recent conferences in Washington. Previous bi-lateral agreements have established the 14-year dollar convertibility guarantee, and the right of free and equal access for those who invest in projects in the ECA member nations or their colonies. A new provision calls for local currency advances to approved projects out of ECA's 5% stockpiling fund. This would allow American investors to borrow local currencies to provide for payrolls, etc., and repay his debt out of profits through sales to the U. S. stockpile.

Supreme Court Decides Important Labor Issues

The Supreme Court got off to a fast start on many labor cases before it this term. Some of the decisions will have a bearing on the bargaining relations in the mining industry.

The Court refused to reconsider its "overtime on overtime" ruling of last June in the Bay Ridge stevedoring case. It also would not upset a National Labor Relations Board decision, upheld by the Circuit Court, that an employer cannot refuse to bargain on individual "merit" wage increases. Many other important labor relations principles will be decided in months to come.

Legality of the anti-closed-shop constitutional amendment in Arizona is before the court, as are closed shop bans in Tennessee, Nebraska and North Carolina.

The 1947 portal-to-portal act restricting wage payments for the time consumed in getting ready to work may be tested in a case brought to the Supreme Court by Walter Reuther's UAW-CIO against General Motors.

Can an employer in a mining town deny his employees the rental of a company-owned community hall for a CIO organization meeting when it is the only available meeting place in town? In a case involving four North Carolina cotton mills in a mill town, NLRB said it was an unfair labor practice to deny use of the hall for a union drive. A U. S. Circuit Court, disagreeing with NLRB, upheld the mill owners. The Supreme Court has agreed to decide the issue.

Legality of last May's railroad strike injunction is being tested by three railroad brotherhoods.

The Court's views on four parts of the Taft-Hartley labor law are likely to be expressed this term in the following cases:

Political Expenditures. Conviction in Hartford, Conn., of the AFL painters union for spending union funds for political advertising urging defeat of congressmen who voted for the Taft-Hartley law.

Non-Communist Affidavits. This may be decided either in the Inland Steel case also involving bargaining on pensions, or in a matter involving a CIO left-wing union at Woolworth's.

National Emergency Injunctions. Conviction and $1,420,000 in fines against John L. Lewis and the United Mine Workers for violating an 80-day injunction against a coal strike last winter.

Closed-Shop Ban. Appeal of the CIO Maritime Union from NLRB's finding that the union's hiring hall demand against four Great Lakes oil tanker firms is illegal.

Mineral Census Postponed—Lacks Appropriations

No census of the mineral industries will be taken for the year 1948. The 80th Congress passed legislation providing for such a census, but no funds were appropriated to carry out the project. The next census for mineral industries is scheduled for 1954, to cover activities during 1953. The last one covered activities during 1939.

MMSW Runs Into Snag With Canadian Labor Group

The CIO Mine, Mill and Smelter Workers is in trouble with the Canadian Congress of Labour, whose executive council has suspended Mine-Mill and barred Harvey Murphy of the Union from attending CCL conventions for two years. MMSW is appealing this action at the CCL's October convention.

Although other reasons were given, the MMSW officers suspect that the actions stem from "covetous eyes" that the CIO steel workers are casting on the MMSW Canadian membership and the support by some CCL officials of the Government's anti-Communist drive against MMSW.

Mine-Mill was suspended for printing in its newspaper, *The Union*, a story critical of A. R. Mosher, CCL president, for which it blamed a Canadian correspondent and fired him. Murphy was barred as a delegate for criticizing some of the CCL leaders of "playing ball" with the Canadian Government when Reid Robinson was being deported.

Resumed Government Controls a Possibility

Priority and allocation controls over the base metals are a definite prospect for next year. At least that is the conclusion many Washington observers reach when they study the probable impact of proposals of the present administration.

Combine the impact of a munitions lend-lease program for Western European nations (now being talked in Washington and Paris and estimated to cost from $2,000,000,000 to $5,000,000,000), an increase in military hard goods procurement next year, and an increase in Marshall Plan exports of semi-finished steel and other metals, and the answer comes out "there isn't enough to go around."

Meanwhile, the very instrument for the insertion of priority and allocations controls into the economy has finally come to light. A 20-section "Emergency Power Act" is now being circulated, sub-rosa, on Capitol Hill by the National Security Resources Board. This is an omnibus bill containing every war power which appeared during the last emergency, plus several new ones. The powers range from authority for "dollar-a-year-men" through priority and allocation controls, manpower draft and censorship of communications. It would allow the establishment of RFC-type corporations to build defense plants, buy metals, etc.; guarantee production loans; provide anti-trust law exemptions; stabilize prices and wages; outlaw strikes; and provide contract price adjustments and contract profit renegotiation.

The wording of the "fine print" in the bill is still undisclosed, but the introductory wording of the measure gives the impression that once it is passed and "put on the shelf", any one of the controls within the general framework of the legislation could be instituted on a declaration of necessity by the President and the concurrence of the Senate.

The way Washington observers see it, it would not take a war to bring out some of the NSRB's controls. The word "emergency" appears in the heading of the bill. A critical shortage of steel mill products, or copper, lead, zinc, or cadmium, could be construed as an emergency.

President Truman has been asking for "emergency" controls for over a year. Last fall Congress turned him down, then passed the Taft Voluntary Allocation Program (Public Law 395). This gave the steel industry the chance to institute controls "on a voluntary basis."

The steel people, with mandatory

controls staring them in the face next year, have served notice that the "voluntary" program will end, so far as civilian programs are concerned, next March 1. Allocations for military steel, however, will continue for six months after the March 1 deadline, mainly because the Draft Act passed by the last Congress gave the military mandatory priority over other steel customers.

Steel is a good example of how close the country is now to the "emergency" need for controls over production and distribution of metals. The voluntary agreements program for domestic consumers is taking 500,680 tons of steel mill products a month. Exports to Marshall Plan countries are drawing down another 100,000 tons a month. Exports to nations outside the Marshall Plan sphere take another 300,000 tons a month. Thus, more than 960,000 tons of steel a month are being withdrawn, roughly 20% of total output.

Steel set-asides for the Army, Navy and Air Force are running at a rate of 1,230,000 tons a year. This is being purchased with a hard goods budget of about $1,000,000,000. Multiply this military tonnage by five and the "guestimate" for the tonnage needed for a $5-billion munitions lend-lease program for Europe results.

The six-million-ton answer indicates that this program alone would take at least one-tenth of total finished steel production.

Although addition of the munitions lend-lease program would swell "programmed" deductions from mill production to about 30%, the real impact would be in certain of the mill commodities. Steel shapes and plate, already programmed at 22 and 33% of production, respectively, would take on a heavier load through lend-lease and other "program" demands. Here, according to steelmen, is the area "within which lies the possibility of a complete and undesirable revision of our peacetime economy."

David F. Austin, vice president of the U. S. Steel Corp., told a select military audience last month that when it becomes necessary to cut off large numbers of consumers of a single product, or shut down certain finishing units in order that semi-finished steel may be used for more essential products, then "we face a return to complete government control of both production and distribution."

It is the extent of the "power politics" inaugurated by the present administration and carried on by the next one—how big a lend-lease, how much U. S. armament—that will regulate the extent of control which will be forced on the domestic economy. Military lend-lease to Europe is not a political fact yet—both Dewey and Congress will have something to do with this decision. Official Washington won't bet against it, but industry observers believe otherwise.

Advisory Council Endorses Leadville Tunnel Extension

The Leadville (Colo.) drainage tunnel project, started during the war and abandoned after a series of blunders and unexpected difficulties, has been revived by the Bureau of Mines and the National Minerals Advisory Council.

The Bureau has tentatively inserted a $500,000 item in its 1950 budget to extend the shaft, now 6,600 ft. from the mouth, another 11,000 ft. This would, the Bureau claims, lower the water table by several hundred feet, and expose about a million tons of high-grade ores running about 15% metal, compared to the present 3% return. It would also unwater about 1,000,000 tons of ferruginous manganese.

The Budget Bureau took the item under advisement during the latter part of October, but it was doubtful that it would be allowed in the Bureau's budget. Only other possibility of resuming the operation would be Congressional insertion of an appropriation in the Bureau's budget when it comes up for approval next spring.

The tunnel has had a painful history. Started during the war as a "high priority" project with a $1,400,000 budget, which should have sent a 17,500 ft. tunnel to the Hayden shaft, plus several laterals, it proceeded about 6,600 ft. and hit bad ground. The unexpected difficulties, made worse by a cave-in, used up the available money too soon. The end of the war saw the tunnel abandoned.

With the increasing demand for lead-zinc ores and manganese, the question of resuming tunnel operations was put up to the National Minerals Advisory Council. The Council came out in favor of resuming operations. In a letter to Interior Secretary J. A. Krug, Donald H. McLaughlin, chairman of the Council, said that his group by unanimous vote endorsed the Leadville project. He added that the general problem of drainage projects as government undertakings is under study by the subcommittee on Exploration and Development Incentives. This group will report on procedures to secure district-wide cooperation and participation by property owners in building such facilities and on the question of reimbursement through collection of royalties or other repayment methods.

Mining Industry Airs Views On Voluntary Allocations

Donald F. Carpenter, vice president of Remington Arms Corp., and new chairman of the Munitions Board, has been told in no uncertain terms why the military is not getting enough non-ferrous metals for its stockpile.

It all came about at last month's first, and only, meeting of the copper producers with Commerce Department and Munitions Board executives concerning a "voluntary agreements" program for military stockpiling. The industry said it would rather establish an individual company basis of purchasing. It rejected the voluntary procedure.

Louis S. Cates of Phelps Dodge Corp. told Mr. Carpenter that the Bureau of Federal Supply had "never asked us for any copper." Other industry representatives added to Mr. Cates' exposé of the buying technique of the Government by pointing out that: "The Bureau of Federal Supply insists upon buying copper at below the market price"; "There is no one in either the Munitions Board or the Bureau of Federal Supply that knows anything about copper"; "We have offered tonnages of copper to the Bureau of Federal Supply at market price and have been turned down"; "There is so much red tape and delay in making a purchase contract that it is not worth the time to wait that long."

Essentially the same industrial reaction was found in all of the meetings with the two agencies over voluntary allocations for stockpiling last month. Metals represented included copper, zinc, cadmium, lead and bismuth. Only lead and bismuth industry people will meet again with the Government representatives, on Nov. 10, mainly to hear the argument which the Munitions Board did not have ready last time.

Something probably will come out of the meetings, however. The industry has agreed to help out on an individual basis, when it can. The Munitions Board will probably obtain the services of a copper expert who will act as a "field procurement" agent for the Board.

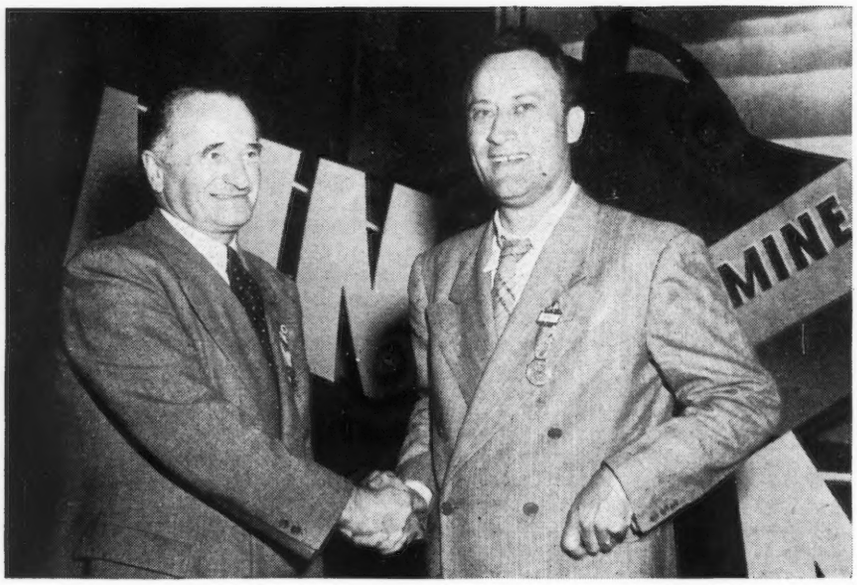
MMSW Struggles to Retain Bargaining Supremacy

In an NLRB election in Cleveland, employees of the Apex Smelting Co., where MMSW had a contract, voted 163 for "no union" and only 44 for the Die Casting Division of the CIO United Automobile Workers, headed by Ken Eckert. This was one of the first tests of whether Eckert can swing to the auto worker's union the contracts MMSW has held under his leadership. Eckert, former director of MMSW's Casting Division, recently split with MMSW leaders and affiliated many of its locals with UAW-CIO as a die casting division.

This victory for MMSW was publicized in the Communist *Daily Worker* as "the hardest blow to date to the disruptive efforts" of Eckert.

Herman Clott, national legislative representative of MMSW in Washington, has been assigned as regional director in Cleveland, where the Eckert group is regarded as being strongest.

NEWS OF THE INDUSTRY



JOHN CLARK, left, president of International Union of Mine, Mill & Smelter Workers, shakes hands with Senator Glen Taylor, vice presidential candidate of Progressive Party and guest speaker at San Francisco MMSW convention.

Speakers at California Convention of IUMMSW Attack Industry, Government, and the CIO

JOE GAMBATESE, McGraw-Hill Washington News Bureau
MARGARET RALSTON, McGraw-Hill West Coast News Bureau

If the 44th convention of the International Union of Mine, Mill and Smelter Workers produced any surprise for mining management, it was this: The industry got no more abuse than did the United States Government and the CIO, with which this 55-year-old union is affiliated.

From beginning to end, the week-long September sessions in San Francisco lambasted the industry (identified synonymously with "Wall Street"), the country's foreign policy and the failure of the CIO to conform to the Mine-Mill left-wing views or put an end to the breaking up of the union's membership.

The convention lived up to advance expectations that it would stay on the Communist Party line, come what may. Significantly, it called for repeal of the draft, election of Communist-backed presidential candidate, Henry A. Wallace, an end to the Marshall Plan, and dismissal of the indictments against 12 Communist Party leaders. It condemned the House Committee on Un-American Activities and the "loyalty purges" in the Government. It asked CIO President Philip Murray to "reprimand and censure" James B. Carey, secretary-treasurer of CIO, for his magazine article, "We've Got the Reds on the Run," and for his House Labor Subcommittee testimony that the left-wing CIO electrical workers union was a Communist front "on many questions."

Mine-Mill pleaded for unity in the CIO and asked that secessionists be condemned and that CIO enforce its policy against raiding.

Mine-Mill membership dropped in the past year from 108,625 to 108,232 at the end of June. This figure doesn't reflect the estimated loss of some 15,000 casting workers in July. Financially, however, the union did better in the past year than the year before, when it operated $120,000 in the red largely because of the internal split with John J. Driscoll, a right-wing New Englander, on the Communist issue. Driscoll led a claimed 30,000 members out of Mine-Mill and into the CIO shipyard union. Secretary-Treasurer Maurice E. Travis reported assets of $127,000 compared with $80,000 a year ago. The union operated at a gain of $47,000 for the year, $42,000 of it representing assessments to fight the secessionists.

For the second time, Mine-Mill officials will seek to raise the 65c. monthly per capita tax paid by local unions. The convention authorized a referendum to raise it to 80c., with 5c. earmarked for the strike fund. Last year the membership voted down a proposal to raise it to 75c.

Two other issues, reflecting Mine-Mill's internal difficulties, will also go to referendum. One is a measure designed to keep local union treasuries within Mine-Mill and out of the hands of secessionists. The other would abandon the castings division (which apparently no longer exists since the defection by Eckert) and establish an industry council whose locals would be attached to the Mine-Mill geographical district organization.

A convention proposal to obtain a referendum vote on requiring Mine-Mill officers to sign non-Communist affidavits and thus comply with the Taft-Hartley law was defeated. An executive board member told delegates employers would influence the referendum and split the union.

Also defeated was a proposal that election of Mine-Mill international officers and amendment of the constitution take place at the annual convention, instead of by referendum.

The convention also:

Demanded repeal of Taft-Hartley.

Rejected a 12-cent hourly wage increase proposed for Mine-Mill staff.

Voted full support of the Communist-dominated World Federation of Trade Unions.

Asked for return of rent and price controls.

Asked for legislation to make control of silicosis and compensation for its victims a responsibility of the federal government.

Protested to President Truman because the Immigration Service denied entrance to some Canadian delegates.

The convention approved a Mine-Mill executive board policy statement which included recommendations:

ON WAGES—Higher wages out of profits without tying wage increases to the cost-of-living index, a 30-hour week without pay reduction, severance pay, three weeks' vacation, opposition to incentive systems.

ON CONTRACTS—More effective national bargaining, protection against damage suits.

ON BARGAINING AND STRIKE STRATEGY—Better integration of industry councils in bargaining, coordination with other CIO unions and a single expiration date for all contracts in an industry.

ON HEALTH AND ACCIDENT BENEFITS — Seek company-paid group insurance and welfare benefits; ask for a national survey by the U. S. Public Health Service of living and working conditions in the nonferrous mining industry.

UMW Aids Research On Silicosis Treatment

Last month much publicity was given to progress made in silicosis treatment at Jefferson Medical College Hospital, Philadelphia. A new procedure developed by the hospital gave great relief to 500 silicosis sufferers, according to Dr. Burgess L. Gordon, clinical professor. Dr. Gordon gave credit to Dr. Hurley L. Motley, director of the hospital's Barton Memorial Laboratory, who combined the use of a nebulizer with an intermittent positive pressure cycling valve.

Heretofore such afflictions as pneumonia, bronchitis, lung abscesses and bronchial asthma had been successfully relieved with medicated mists. The nebulizer, however, could not be used on silicosis patients because the impaired functioning of the lungs prevented them from breathing deeply. The cycling valve aids the patient's breathing by pumping into the lungs air mixed with atomized drugs and exhausting it.

In the past doctors have relied on X-rays for determining the presence and extent of silicosis. The United Mine Workers, whose Anthracite Health and Welfare Fund supplied $575,000 to this research project, has pointed out that X-rays do not always indicate correctly whether a man has silicosis and that progress shown in X-rays often does not match the progress shown by symptoms. As a result many silicotics are unable to prove eligibility for compensation.

New tests developed by the Jefferson hospital carefully measure the amount of air inhaled, amount exhaled, and the amount of oxygen actually getting into the blood stream, the latter by means of a hypodermic needle in the patient's arm during the tests. These data, according to UMW release, will enable specialists to determine what mixtures of oxygen and what drugs can best relieve the patient, as well as the extent to which a man is disabled by silicosis.

Union Corp. Resigns Option on Unuwira

Union Corp., London, who early last year took over technical direction of the Mpanda lead works of Unuwira Minerals, Ltd., in Tanganyika, has decided not to exercise its option to purchase an additional 400,000 shares of Unuwira stock and has resigned from its management capacity.

The prospecting program carried out by Union Corp. during its period of option failed to bring to light extensions of the known Mukwamba orebody, or a new orebody. Therefore, earlier plans for large-scale operations were not justified.

It is reported that Unuwira Minerals has sufficient funds to continue development here for 18 months, and to install a 100-ton pilot mill.

DR. PAUL F. KERR, head, department of geology, Columbia University, exhibits the newly discovered mineral, sengierite, containing 60% uranium. Named in honor of Edgard Sengier, managing director of Union Miniere du Haut-Katanga, the mineral was found in the chloride-talc rocks in the Belgian Congo. Chemical formula is $2CuO.2UO_3.V_2O_5.10\ H_2O$ (Wide World Photo.)

No Purchase Program for Thorium, Monazite

The Atomic Energy Commission has reported that although strict control of exports and domestic movement of thorium and thorium-bearing ores, including monazite, must be maintained under the Atomic Energy Act, the usefulness of thorium and monazite so far as the Commission is concerned is limited for the present to research. The only thorium AEC purchases is for experimental purposes, chiefly in the form of thorium salts, and the Commission has no purchase program for monazite ore as such.

The AEC has announced plans to further stimulate production of uranium by negotiating with the Vanadium corporation of America to buy uranium from two ore treatment plants which that corporation will bring into operation next year. One of the plants is to be built by VCA in the White Canyon district in southern Utah. AEC will lease to the Vanadium corporation a uranium-vanadium mill at Durango, Colo.

Pilot Plant to Produce Titanium at $1.50 Per Lb.

Dominion Magnesium, Ltd., Toronto, has announced pilot plant operations for the production of titanium, in addition to barium, strontium and high-purity calcium. Next year the plant will again produce magnesium. J. S. Barrington, vice president and general manager, has been quoted as saying, "We are certain that we can produce titanium cheaper than anybody else," by means of a new process developed by the consulting metallurgist, Dr. L. M. Pidgeon. The process is believed to be superior to the duPont method, which is based on the Kroll process and requires the reduction of metal, in powder form, from titanium tetrachloride. The intermediate step of forming titanium tetrachloride is eliminated in the Pidgeon process of direct reduction of the oxide into metal in powder form. The cost of titanium metal after the test plant has been enlarged is estimated at about $1.50 per lb.

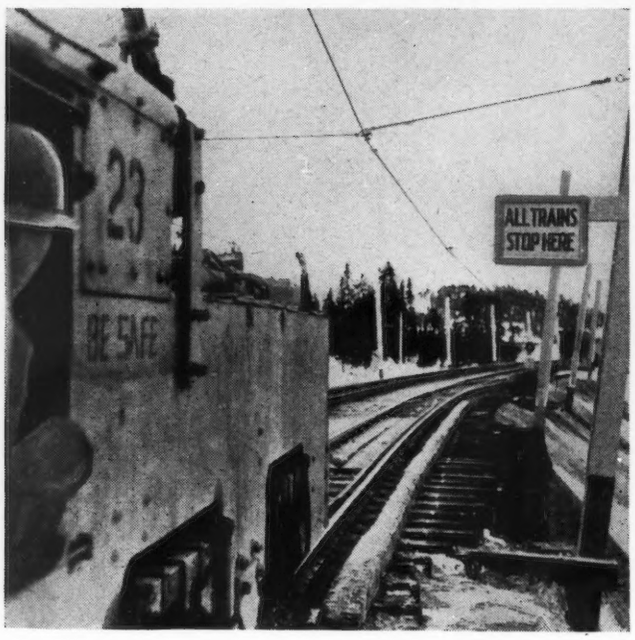
Mineral Industries Dept. Protests Lands Act

The recent act and regulations in regard to filings on Oregon and California Railroad revested lands and Coos Bay Wagon Road grant lands, closed to mineral entry since 1937, require that any owner of a claim on these lands must file a copy of notice with the District Land Office where the claim is located. He must also file with the county recorder as required by state law. Claims located before April 8, 1948, were to be filed not later than Oct. 5, 1948. Those located after April 8, 1948, must be filed within 60 days of location.

Release from the office of Congressman Harris Ellsworth, author of one of the companion bills which became law on April 8, pointed out that confusion and uncertainty regarding proper filing of mining claims on O and C lands was thus removed. However, the "Ore.-Bin," official publica-

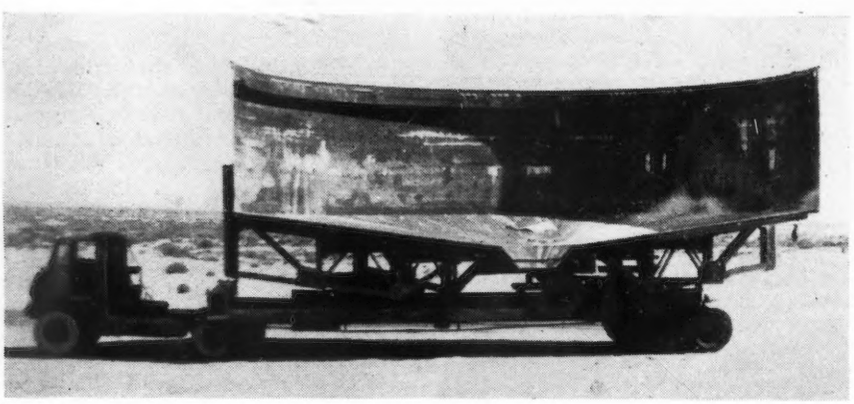
(*Continued on page* 150)

OPERATING IDEAS



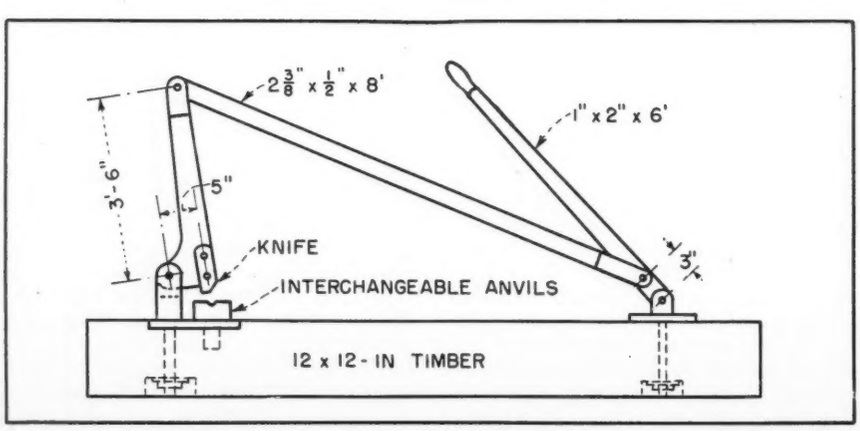
Reflecting Signs for Mine Haulage System

A reflecting sign used at the Climax Molybdenum Co. operation, Climax, Colo., is shown above as it appears in the daytime (left) and at night (right). Similar signs of Scotchlite are used underground for traffic control, on ventilation doors, and to mark the location of fire fighting equipment.



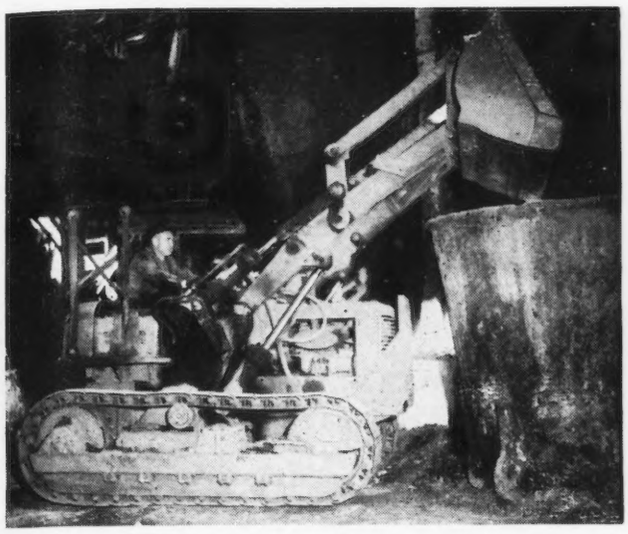
Thickener Moved in Halves

A 35-ton thickener was cut in two and moved 15 miles from the Permanente Metals Corp., Owens Lake, Calif., to the Natural Soda Products Co.'s plant at Keeler, Calif., where the parts were welded together again. R. J. Goulet Co., contractors in Bishop, Calif., handled the construction and moving job.



Simple Rod Cutter

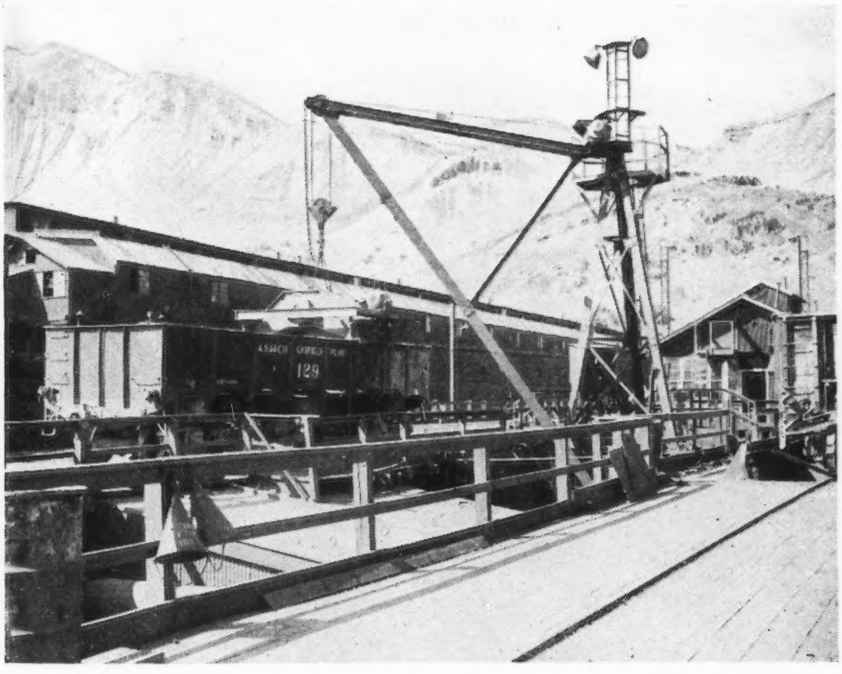
Concrete reinforcing rods can be cut swiftly for mine and mill construction jobs with this steel cutting unit devised and built at a small gold-silver property in central Mexico. The leverage is designed so that the knife can exert a pressure of 70,000 lbs. at the cutting edge. Interchangeable anvils are provided for various sizes of rod. The entire unit is mounted securely to a 12x12-in. timber, and can be transported readily.



TRACTOR-SHOVEL breaks relatively large pieces of spill, removes material from under converters and loads into ladles.

NEW GASOLINE-powered wheelbarrow has given valuable service in the preparation of construction sites at the Garfield smelter.

Mechanical Improvements at the Garfield Smelter



CAR-SHAKEOUT is suspended from a jib mounted on a tripod tower. The unit can be turned to unload cars on either of two tracks. Unloading time has been reduced considerably.

N. R. ALSTON
Metallurgist
Garfield Smelter
American Smelting and Refining Co.
Garfield, Utah

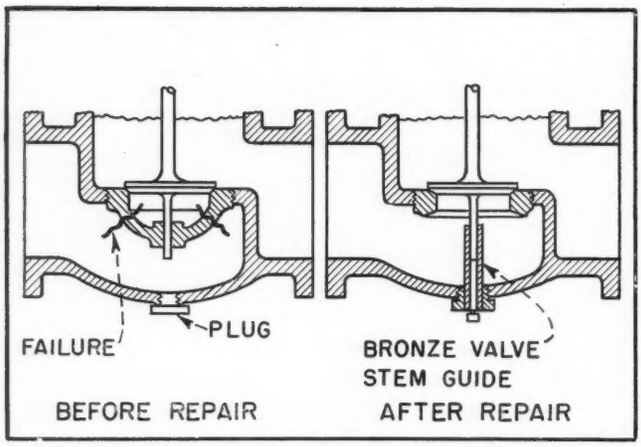
In recent years several new pieces of equipment have been put into service at the Garfield smelter of American Smelting and Refining Co., Garfield, Utah, with good results, among them the Tracto-Shovel, Payloader, mechanical wheelbarrow and car shakeout.

In December, 1947, a Tracto-Shovel was put into operation to pick up spill in the converter aisle and under the converters. This unit breaks relatively large pieces of spill, removes material from under converters, and loads into "boats" or ladles. The only change made on the shovel has been the addition of a steel canopy to protect the operator. Another use for the Tracto-Shovel was found in dismantling reverberatory furnaces for general repairs. After the arch and sidewalls are knocked in, one buckstay and a portion of the skewback plate are removed to permit entry of the shovel into the furnace to pick up and haul the old brickwork from the furnace hearth and load it into boats in the converter aisle. Result is a safe, clean and quick clean-up of old brickwork.

Two Payloaders are being used to unload box cars containing concentrates. This flotation product is often wet and sticky, and employment of these units has greatly speeded up unloading.

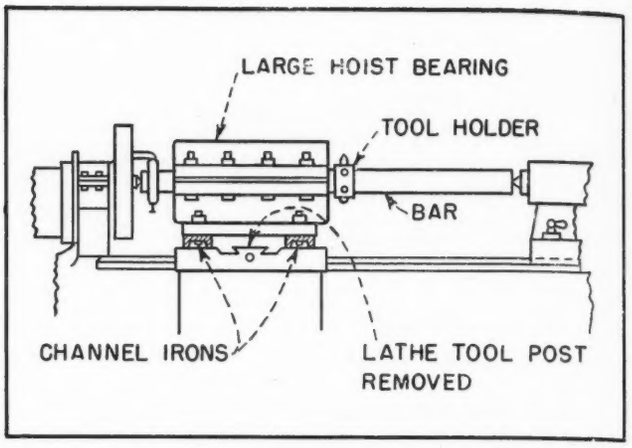
The newest member of the mechanical equipment family placed in operation at the smelter is a motorized wheelbarrow. It is powered by a 3-hp. gasoline engine, has two drive wheels and one rear castor wheel, all with pneumatic tires, and has a capacity of 1,000 lb. The bucket is dumped mechanically. Although the unit has been in use but a short time, it has given valuable service in the preparation of construction sites and a second machine will be put in service soon.

Unloading gondola-type railroad cars has been facilitated by installation of a "Car Shakeout." The unit is suspended from a jib boom on a tripod tower, so arranged that it can be used for unloading cars on either of two tracks. Time-consuming shoveling to clean the car doors is no longer required, but center sills are still cleaned by hand labor. Unloading time has been materially reduced.



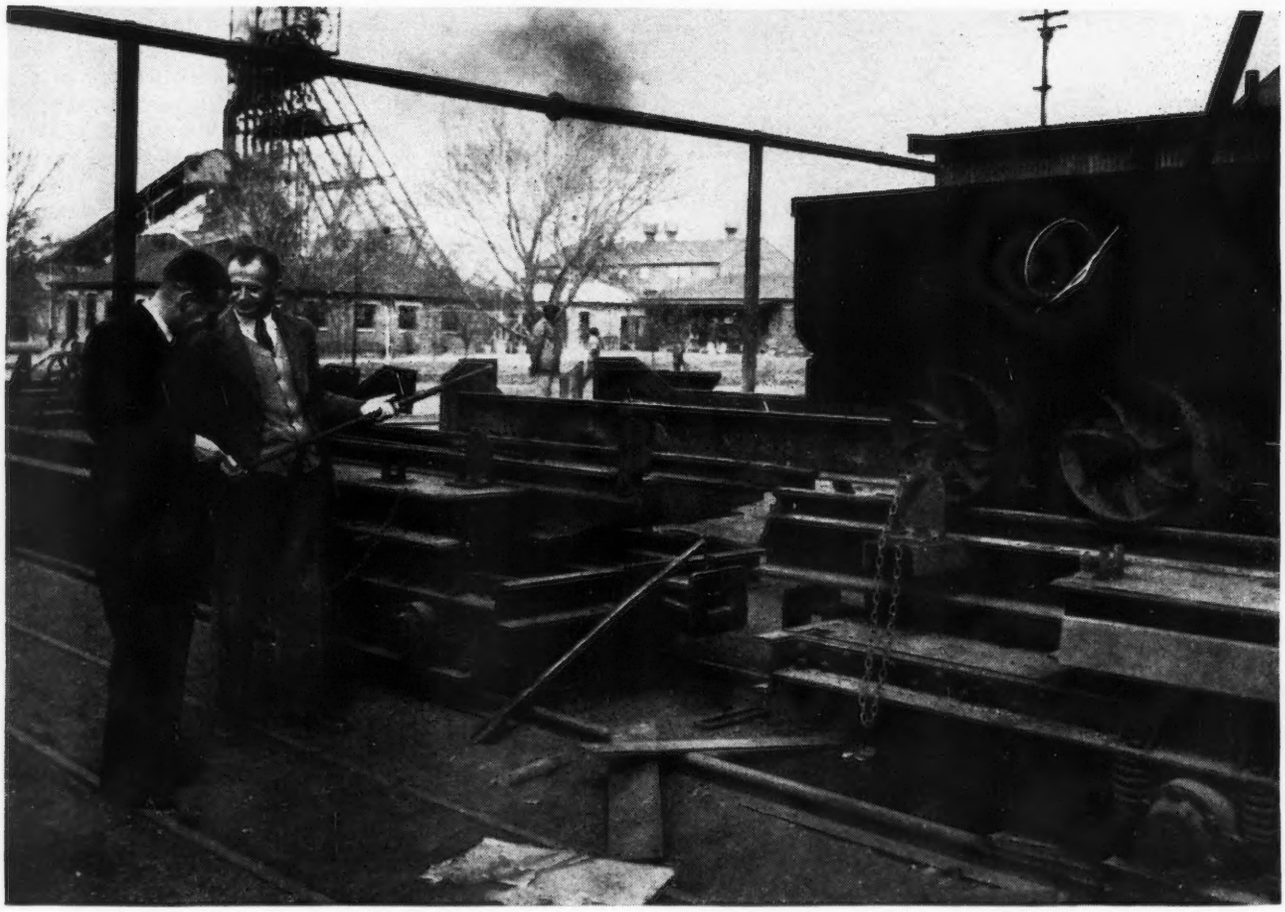
Simple Valve Repair

Because of the absence of repair parts and welding equipment, ingenuity was required to repair an automatic valve which broke in a mill water-supply line as shown at left above. The repair was made successfully by drilling and tapping the plug at the bottom of the valve body, and inserting a bronze nipple to serve as a guide for the lower valve stem.



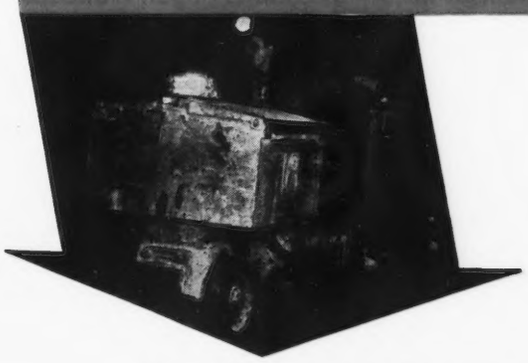
How to Bore a Large Bearing

Boring a large rebabbitted bearing is difficult if attempted on a small lathe. However, machinists at a Mexican operation used the simple setup shown above to turn large hoist bearings in a small lathe. The bearing rests upon two channel irons on the lathe apron from which the tool post has been removed. Cutting tools are mounted in a holder on the central bar.



Transport Unit for Two-Gage Track System

TWO-FT. GAGE TRUCKS are run on to 3-ft. gage flat cars as shown above at Grootvlei Proprietary Mines, Ltd., Springs, South Africa, to save time and labor in the transfer of material from older sections of the mine using narrow-gage track to a new section using 3-ft. gage track. The cars being carried by the flat trucks are locked with iron rods which pass through the wheels.



Bring production up *fast* with battery-powered haulage units and *EXIDE-IRONCLAD BATTERIES*

Greater tonnage, lower costs and trouble-free performance are among the reasons why battery-powered haulage units are preferred in so many mines, quarries and tunnel operations. And when the motive power is supplied by Exide-Ironclad Batteries you can count on dependable service with full shift availability day after day.

Keep production high and haulage costs low. Use battery-powered trammers, locomotives and shuttlecars. Use Exide-Ironclad Batteries. They have all four of these vital characteristics of a storage battery: high power ability, high electrical efficiency, ruggedness and long life.

1888 . . . Dependable Batteries for 60 Years . . . 1948

If you have a special battery problem, or wish more detailed information, write . . .

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • *Exide Batteries of Canada, Limited, Toronto*

MINING MEN viewed the latest in equipment at the AMC exhibits in San Francisco.

Highlights of the AMC Equipment Show

THE EQUIPMENT SHOW at the 50th Anniversary Meeting of the American Mining Congress in San Francisco, Sept. 19-23, consisting of some 150 exhibits, did not have to bid for the spectator's attention—not with such features as Euclid's giant 10-yd. dump truck which reared up impressively and dominated the show. Booth after booth competed for attention with varied attractions such as: 1. GE's shooting gallery which always registered bullseyes. 2. WEMCO's guessing game which awarded winning contestants with a cigar.—There were no losers. 3. The caricaturist at the Thor tool booth whose rapid sketches always held the crowd. 4. The pinball machine which awarded a subscription to Mining Congress Journal as a jackpot pay-off.

Geiger-counter demonstrations at the U.S.G.S. booth drew attention when the visitors were not too busy monkeying around with the controls on jumbos which moved booms and rock drills around effortlessly in space. A transparent working model of a Heavy-Media plant at WEMCO's booth qualified as a first-class educational exhibit. Some of the equipment items featured at the show and introduced to the mining industry more recently are reviewed here:

Spiral Feeders. High-speed electromagnetic vibrations are used to operate a new spiral ramp devised to elevate or lower bulk materials and designed to act as a carefully controlled feeder. The new vertical vibratory feeder is introduced by the Syntron Co., Homer City, Pa. A fingertip rheostat or reactor controls the rate of elevation or flow. Short units can be portable, and moved from one processing machine to another. A similar bowl vibratory feeder is useful for feeding dry, bulk materials such as reagents at an extremely low rate per hour.

Air Booster Stamp Mill. A heavy-duty stamp mill featuring an "air-booster" principle to increase striking power was announced by Gruss-Hercules Mining Machinery, 365 Flood Bldg., San Francisco 2, Calif. Capacity is 15 tons per 24 hrs. Power requirement 15 hp. A smaller prospector model weighing 500 lb., requiring 5 hp. with capacity of 6 tons per 24 hr. was also shown.

Rotary Dryer Screener. Sand and other free flowing granular material is dried and screened at the rate of 2 to 3 tons per hr. in the rotary dryer using counter-current direct heat announced by Mines Equipment Co., St. Louis 10, Mo. Write for Bulletin, R. D.-300.

Hard-Rock Belt Conveyor. Designed for heavy duty in metal mines, the "Type 99" belt conveyor built by Goodman Manufacturing Co., Chicago 9, Ill., features: Special troughing idlers; a "knockdown" construction for portability, storage and extension; and convenient take-up and belt-storing devices within the frame. Request Bulletin CC-482.

Cold Rubber for Mining. Gates Rubber Co., Denver 17, Colo., is one of the first large processors to receive supplies of a new synthetic rubber in commercial quantities which has been made by a low-temperature process offering increased control over molecular structure. The new product is reported to withstand abrasion fully 30% longer than the best natural rubber. Consequently, products such as V-belts, industrial hose, rotor tubes, impellers, pump cases and rubber-covered parts now used in the mining industry can be made to yield longer service. The company also announced new pump diaphragms reinforced by a basket-weave fabric and designed to flex more readily—both features prolonging the life of the diaphragm.

Aids for Conveyor Belt Fitting. A wide-belt cutter which operates like a planer mounted on a steel guide-track was displayed by Flexible Steel Lacing Co., Chicago 44, Ill.

(*Continued on page* 110)

KEY FEATURES OF A COMPLETE STEEL SERVICE

Many types still short, but over-all stocks in 13 Ryerson plants are probably the nation's largest.

Prompt personal steel service on all orders, large or small, is a Ryerson tradition.

Accurate cutting to your order is assured by modern Ryerson equipment.

Over a Century of steel experience means more know-how applied to your steel problems.

You get quick delivery anywhere, because the network of Ryerson plants stretches from coast to coast.

PRINCIPAL PRODUCTS

BARS—carbon & alloy, hot rolled & cold finished
STRUCTURALS—channels, angles, I & H beams, etc.
PLATES—sheared & U. M., Inland 4-Way Floor Plate, etc.
SHEETS—hot & cold rolled, many types & coatings
TUBING—seamless & welded, mechanical & boiler tubes
STAINLESS—Allegheny metal sheets, plates, bars, tubes, pipe, etc.
REINFORCING—bars & accessories, wire mesh, etc.
BABBITT—and phenolic laminated bearing material
MACHINERY & TOOLS—metal working & boiler shop

Added Ryerson service includes a chart to guide heat treating sent with alloy shipments.

RYERSON STEEL

Joseph T. Ryerson & Son, Inc. Plants: New York • Boston • Philadelphia • Detroit • Cincinnati Cleveland • Pittsburgh • Buffalo • Chicago • Milwaukee • St. Louis • Los Angeles • San Francisco

CAN YOU IDENTIFY THESE VISITORS?

LENN REDMAN SKETCHED these caricatures at the Independent Pneumatic Tool Co. booth.

Successive cuts ⅛ in. deep insure a clean straight cut for belts up to 1⅓ in. thick. The new hinged "Flexco" belt fastener for separable joints, and particularly useful for mine conveyor installations requiring frequent extension was also featured.

Heavy Duty Shakers. Shaker conveyors for heavy duty in metal mines were exhibited by Goodman Manufacturing Co., Chicago 9, Ill. Their Bulletin CC-424 is virtually an illustrated handbook on shaker installations in coal or metal mines.

Fluid Drive for Mine Machines. An "Electrofluid Drive" which protects machinery and materials in process from damage by shock or overloading was displayed by Link-Belt Co., 300 W. Pershing Road, Chicago 9, Ill. Available in sizes from ¾ to 20 hp., the motorized hydraulic unit can be used for variable or constant speed drives.

Flotation News. Western Machinery Co., San Francisco 7, Calif., announced that it has been assigned exclusive manufacturing and sales rights for the Fagergren flotation machine.

Hydrostatic Precipitator. American Air Filter Co., Inc., Louisville, Ky., featured the Type N Roto-Clone which cleans air by a combination of centrifugal force and inter-mixing of water and dust-laden air. Write to the company for its complete booklet on "Dust Control."

Crusher for Sticky Ores. A new reversible swing-hammer type "Mud Hog" crusher was announced by the Jeffrey Manufacturing Co., Columbus 16, Ohio. The crusher is especially designed for reducing wet sticky materials such as clay, bauxite, phosphate rock and other ores. Write to the company for Bulletin No. 811.

New Way to Fire Rounds. "Spittercord" is the name of cord which burns at a uniform rate and makes possible the proper consecutive lighting of all safety fuses of a round from a single point of ignition. The center section of "Spittercord", made by Coast Manufacturing & Supply Co., Livermore, Calif., is a soft iron wire which is covered by a burning medium and a surface layer of water-resistant wax. The cord is 1/10 in. in diameter and plainly marked in 1-ft. intervals. A leaflet published by the Coast Manufacturing Co. shows diagrams of hook-up for raise rounds, burncuts, slab rounds and draw-cut drift rounds.

Ventless Blasting Caps. A new blasting cap, the Minimax Ventless delay electric blasting cap, was announced by Western Cartridge Co., East Alton, Ill. The new cap provides a method of firing multiple shots with minimum shock. The short interval of delay offered by the caps permits better fragmentation and greater control over back break. Because of the absence of vents, water cannot enter the caps and cause misfires. Premature ignition of dynamite due to hot gases is likewise eliminated. Western's booklet "Blasting Caps" describes their line and concludes with useful information and tables on blasting.

Tungsten-Carbide Bits. A new line of cross bits and chisel bits fitted with "Firthite" tungsten-carbide cutting edges was displayed by Firth Sterling Steel & Carbide Corp., McKeesport, Pa. Firthite is a sintered tungsten carbide in a matrix of metallic cobalt. Both cross bits and chisel bits are threaded to fit standard drill rods, and are described in Bulletin M-101 issued by the company.

Two-Machine Boom Jumbo. A new jumbo featuring two air-power booms carrying drifters was demonstrated at the booth of Ingersoll-Rand Co. Screw-driven ceiling jacks permit quick and positive positioning. Centralized controls enable operators to maneuver booms into drilling position. The unit can support standard feed drifters, or those fitted with long feeds for drilling with Carset tungsten-carbide bits. The jumbo is described in Form 4078, issued by Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.

Throw-Away Rock Bit. A new integral stud-bit which fits into a threaded socket on drill steel was exhibited by Joy Manufacturing Co., Pittsburgh, Pa. Chief advantage claimed for the "Thro-Way" bit is savings in drilling cost because bit sharpening is eliminated.

Trackless Equipment for Metal

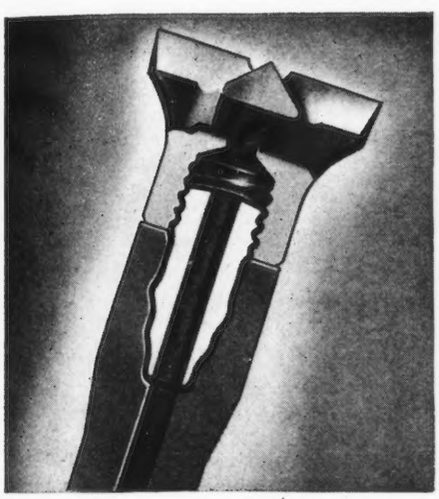
(*Continued on page* 112)

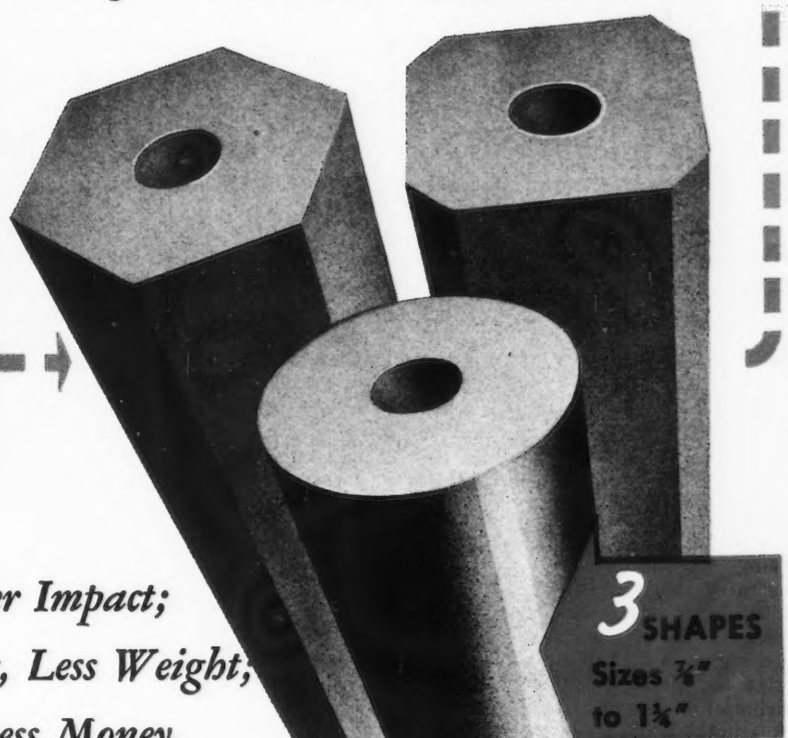
Mining Men Shown Above Are:

1. R. D. Leisk, General Manager, Sunshine Mining Co., Kellogg, Idaho.
2. E. R. Borcherdt, Chief Research Engineer, Anaconda Copper Mining Co., Butte, Mont.
3. O. W. Bilharz, Bilharz Mining Co., Baxter Springs, Kan.
4. Worthen Bradley, Bradley Mining Co., San Francisco, Calif.
5. J. K. Richardson, Mgr., Utah Mining Assn., Salt Lake City, Utah.
6. Howard I. Young, President, American Zinc Lead & Smelting Co., St. Louis, Mo.
7. E. S. McGlone, Vice President, Anaconda Copper Mining Co., Butte, Mont.
8. Robert M. Hardy, President, Sunshine Mining Co., Kellogg, Idaho.

Here is CRUCIBLE'S

NEW "Park A" Alloy • hollow drill steel





3 SHAPES
Sizes ⅞" to 1¼"

Offers Longer Life Under Impact;
Permits Smaller Sections, Less Weight;
Makes More Hole for Less Money.

CRUCIBLE'S new "Park A" Alloy offers a big saving over the use of carbon drill steel in the cost of drilling with stud jackbits. Recent tests show savings in steel cost alone to be in excess of 30%. In addition, "Park A" Alloy permits maximum drill speeds; has longer life with stud jackbits; enables you to use a smaller section with the same size bit.

Crucible's new alloy hollow drill steel has been thoroughly tested, conforms to I-R Specification 139, and is recommended for jackstud insertion. Mill tests and inspections insure high quality and uniformity of every lot as to hole centering, size, and section accuracy, fatigue strength, stiffness, analysis, and structure.

Ask your Crucible CRUSCA drill steel salesman about "Park A" Alloy hollow drill steel. Get more hole for less money.

IMPORTANT! *New Data Sheet on Crusca "Park A" Alloy Drill Steel Just Printed! Write for Your Copy!*

CRUCIBLE STEEL Company of America

"FULL-RANGE" QUALITY STEELS for INDUSTRY

HIGH SPEED • TOOL • STAINLESS • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

Chrysler Building, 405 Lexington Ave., N.Y. 17, N.Y.

Branches, Warehouses, and Distributors in Principal Cities. Consult your Telephone Directory or Thomas' Register for Nearest Office

AS THE ARTIST SAW THEM

AS THE ARTIST SKETCHED the caricatures appeared on a screen for all to see.

Mines. Continuous type loaders, shuttle cars, and elevators for hard-rock mines are illustrated and described in Bulletin J-107 issued by Joy Manufacturing Co., Pittsburgh 22, Pa.

Fast Drilling Unit. Unique features of Ingersoll-Rand's new fast-drilling "Quarrymaster" are fully illustrated in color in the company's folder Form 4077 available at 11 Broadway, New York 4, N. Y. The tractor-mounted self-propelled unit can be set up 15 to 20% faster than conventional quarry or open-pit drills, and employs an air-operated piston drill delivering more than 200 blows per min.

Lightweight Diamond Drill. The new CP-55 diamond drill announced by Chicago Pneumatic Tool Co., 6 E. 44th St., New York 17, N. Y., has a rated capacity of 500 ft., weighs only 155 lb., and rotates at 0 to 1,500 rpm. Optional models have rotating speeds of 1 to 2,000, and 1 to 2,500 rpm. The No. 3 self-aligning air rod puller weighs 100 lb. and is furnished as extra equipment where required.

New Rock Bit. Timken Roller Bearing Co., Canton 6, Ohio, announces that it is now producing a new line of carbide rock bits developed primarily for extreme rock conditions requiring super hardness and high drilling speed, but not intended to replace the regular Timken deep-hardened steel rock bit. The new bit is detachable, and has the same shoulder-seating features as the all-steel Timkin bit.

Tough Dragline Ropes. The new "Tuffy" special rope for draglines, made by Union Wire Rope Corp., Kansas City 3, Mo., is designed for rugged service. The ropes are designed to give maximum flexibility and abrasion resistance.

Convertible Power Shovel. The 33-M power shovel built by Marion Power Shovel Co., Marion, Ohio, can be fitted with a multi-purpose lattice boom to serve as a crane, or support a dragline, scraper, or clamshell; or with a shorter, more rigid boom for service as shovel or backhoe. Write for Bulletin 395-A for full details.

Rubber-Tired Loader. The Model 15 rubber-tired transport rocker-shovel is announced by the Eimco Corp., Salt Lake City 8, Utah. Using the rocker shovel principle, the unit loads, conveys and dumps stockpiled material. Loading cycle for the 6-cu. ft. bucket is 7 sec.

Folding Scraper. The recently introduced folding scraper was exhibited by the Eimco Corp., Salt Lake City 8, Utah. Outstanding advantages of the unit are its ability to work its way out of spills, reduced rope wear and low power requirements. The folding scraper is available in sizes from 36 to 72 in.

Power Shovel for Steep Grades. Insley Manufacturing Corp., Indianapolis 6, Indiana, offers a complete line of power shovels, cranes, and draglines for service in the mining industry. The "Hill-Billy," HB-12, ½ cu. yd. unit is built for rough country and can be adjusted for operation on grades up to 32½%. It has interchangeable attachments which enable it to function as a shovel, hoe, crane, dragline and clamshell.

Drill-Hole Surveying Devices. A magnetic single-shot photographic device, 1⅜ in. outside diameter, which records inclination and direction of a drill-hole with an accuracy of approximately ¼ deg. was exhibited by Sperry-Sun Well Surveying Co., 1600 Walnut St., Philadelphia, Pa. The instrument is made in two types, one for low angles and the other for high angles. The company also announced an oriented core service which aids in the determination of dip, strike, orientation of bedding planes and fault and shear zones. Cores must be sent to Long Beach, Calif., or Philadelphia for examination. Residual magnetism of heavy mineral components in cores is used to determine orientation.

Elevation Meter. An electronically-operated level measuring device called the Johnson Elevation Meter mounted on a trailer which automatically carries levels with an average accuracy of .08 ft. per mile at a rate of 20 miles per hr. was announced by the Sperry-Sun Well Surveying Co., 1600 Walnut St., Philadelphia, Pa. It is believed that applications in the mining industry will be restricted to determination of elevations for roads

(*Continued on page* 114)

Mining Men Shown Above Are:

9. Ralph W. Neyman, Superintendent, Hecla Mining Co., Wallace, Idaho.
10. Charles E. Schwab, Mining Engineer, Bunker Hill & Sullivan, Kellogg, Idaho.
11. H. A. Walker, Assistant General Manager, Homestake Mining Co., Lead, S. D.
12. Sheldon P. Wimpfen, Editor, Mining Congress Journal, Washington, D. C.
13. J. A. Richards, General Manager, St. Anthony Mining & Development Co., Tiger, Ariz.
14. J. C. Kieffer, Spokane Idaho Mining Co., Kellogg, Idaho.
15. J. B. Haffner, General Manager, Bunker Hill & Sullivan, Kellogg, Idaho.
16. C. M. Marquardt, Electronics Engineer, Combined Metals Reduction Co., Salt Lake City, Utah.

NEW MACK hauls 22½ ton pay loads

● It's "bottoms up" with heaping loads and "profits up" through low-cost hauling when Mack Model LV takes over on tough excavating and strip-mining jobs.

Clear through, in every part, this big, new Mack is engineered to move more yardage per load and more loads per hour.

There's power in abundance with its 200 h. p. diesel engine. Massive strength in its reinforced, alloy-steel, all-welded frame. Assured traction with Mack's exclusive Power Divider.

Mack Duplex transmission gives added mastery over grades and difficult terrain. Power steering and air assist clutch contribute to easy handling and high maneuverability. Final reduction of full-floating Planidrive type, is strong and rugged without excessive weight. Roomy, all-steel cab has offset driver's seat for better vision; is durably built for long-lasting comfort. Planned accessibility means lower maintenance, easier servicing.

Mack off-highway engineers will gladly advise you on the proper application of Model LV to your particular excavating job. Write or call your nearest Mack branch or dealer.

Mack Trucks, Inc., Empire State Building, New York 1, New York. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts. In Canada, Mack Trucks of Canada, Ltd.

MORE AFFABLE SUBJECTS who enjoyed and contributed to the fun of the show.

and railroads in extensive open-pit operations.

Portable Axial Blowers. A new line of portable "Axivane" blowers for mine and tunnel ventilation available in five sizes ranging from ½ to 5 hp. is announced by Joy Manufacturing Co., Pittsburgh 22, Pa. Request Bulletin J-601 for data on capacities in cfm. for various lengths and diameters of ventilation ducts.

Lower Steel Costs. "Park A" and "Alva" are the trade names of two new alloy hollow drill steels announced by Crucible Steel Company of America, 405 Lexington Ave., New York 17, N. Y. It is reported that the use of "Park A" steel has cut steel costs by 30% in a tunnel job. Write to the company for two useful data sheets presenting temperature charts and color scales for tempering both types of alloy steel.

Air Power for Light. An 8¾-lb., air-powered electric generator which will operate two 75-watt bulbs for illuminating underground working places was featured by Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y. Write for Form 5032.

Portable Lighting. A complete line of rugged "String-A-Lite" portable lighting equipment for mine haulageways, stopes, etc., is described in Bulletin SL-200 released by Joy Manufacturing Co., Pittsburgh 22, Pa.

New Hard Hat. Long inter-crossed fibres are banded with a resinous binder to make a new hard-boiled hat announced by E. D. Bullard, San Francisco 3, Calif. The new type is resilient, waterproof and non-conducting.

Shooting Studs Into Steel Plates. The hitherto tedious task of anchoring conduit boxes, hanging pipe, or mounting conveyor brackets can be made effortless with the aid of the "Velocity-Power Driver" which uses the explosive power of blank cartridges to drive steel studs into structural plate. The hand-held driver weighing 4½ lb. was displayed by Mine Safety Appliances Co., Pittsburgh 8, Pa. Request Bulletin TA-15.

Versatile Wrench. C. J. Hendry Co., 27 Main St., San Francisco, Calif. featured the "T. A. C." open-end ratchet wrench with sets of fittings that enable the tool to be used on pipe, tube and cable fittings. The equipment is also adaptable to standard sockets.

Portable Pipe Groover. Victaulic pipe and fittings can now be grooved with the new "Vic-Groover", a portable tool available for pipe sizes from ¾ to 4 in. The device can be hand operated for pipe held in a vise, or mounted in standard power-operated pipe-grooving machines. Write to Victaulic Company of America, 30 Rockefeller Plaza, New York 20, N. Y., for "Catalog and Engineering Manual" describing this equipment and other supplies.

Powerful Lift-and-Pull Tools. Coffing Hoist Co., Danville, Ill., featured a "Mighty-Midget" puller weighing only 6½ lb., but capable of exerting a pull of 500 lb. for jobs around the mine and shop; and a "Hoist-Jack" which can lift or pull a 2,000-lb. load.

Hand Tachometer. The Apparatus Department, General Electric Co., Schenectady, N. Y., offers a hand-held electric tachometer which measures rotational speeds from 200 to 10,000 rpm., and linear speeds from 20 to 10,000 fpm. Special accessories increase the rotation range from 20 to 100,000 rpm.

Radiation Detector. A new portable radiation counter, Model F-3, was displayed by Ultra-Violet Products, Inc., 5205 Santa Monica Blvd., Los Angeles, Calif. The apparatus includes a Geiger counter, pulse amplifier, audio amplifier for earphones, and a counting rate meter circuit. The unit is suitable for prospecting and determining the degree of radioactivity in mineral specimens. The company also displayed a new low-price ($12.50) "Model H Mineralight" useful for examining and detecting fluorescent minerals.

Fire Hose. A rubber-lined woven fire hose that withstands water pressures exceeding 300 psi. is offered for fire protection systems of mine and milling plants by Quaker Rubber Corp., Tacony and Comby Sts., Philadelphia 24, Pa.

Light Utility Hammer. Numerous

Mining Men Shown Above Are:

17. John Curzon, Manager, Chelan Div., Howe Sound Co., Holden, Wash.
18. Donald A. Callahan, Vice President, AMC, Callahan Con. Mines, Inc., Wallace, Idaho.
19. H. L. Hazen, President, Standard Cyaniding Co., Imlay, Nev.
20. William R. Doyle, Resurrection Mining Co., Leadville, Colo.
21. O. N. Friendly, General Manager, Park Utah Consolidated Mines Co., Salt Lake City, Utah.
22. Carl J. Trauerman, Secretary, Mining Assn. of Montana, Butte, Mont.
23. P. C. Fedderson, General Superintendent, Bunker Hill Smelter, Kellogg, Idaho.
24. Harry P. Pearson, Silver Summit Mining Co., Wallace, Idaho.

drilling, pounding, chipping and cutting jobs around the mine plant can be speeded up with the new air-operated "J-10 Jackhammer" weighing 14 lb., announced by Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y. Request Form 4065-A.

Safety Circuit Center. A skid-mounted power distribution center designed for iron mines made by the Mines Equipment Co., St. Louis 10, Mo., features fast-acting circuit breakers and maximum portability.

Portable Switch Panel. The new type K-G distribution box, made by Ohio Brass Co., Mansfield, Ohio, is a portable skid-mounted switch panel built to handle the power requirements of two branch circuits. Connecting 250 and 550-v., d.c., equipment is as simple as plugging in a coffee percolator. Write to the company for circular No. 838 M.

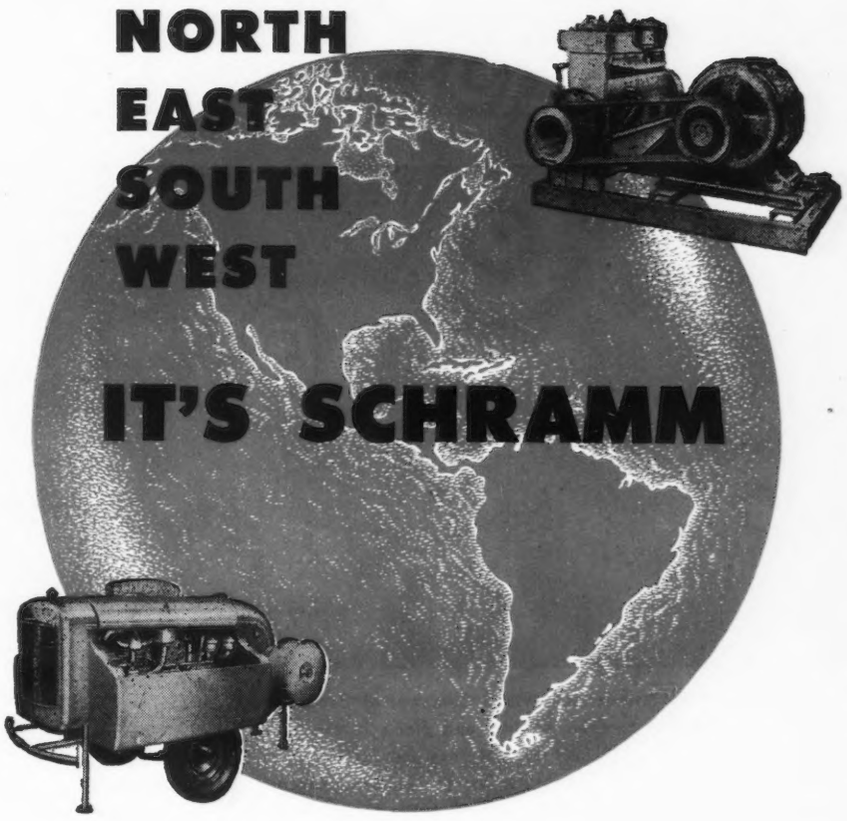
Modern Electrical Equipment. "Packaged" power centers, air-cooled transformers, ignition rectifiers, automatic feed regulators, and trolley locomotives are a few of the items appearing in the booklet "Westinghouse Electrical Equipment for Mine, Mill and Smelter," prepared for the mining industry by Westinghouse Electric Corp., East Pittsburgh, Pa.

Better Power Distribution. "Beware of shoestring power distribution" is the warning issued to mine plant operators in the booklet "What Load-Center Power Distribution Can Do For You" recently issued by General Electric Co., Schenectady, N. Y. Numerous ways of laying out power systems with modern equipment are presented to aid in planning new distribution.

More Power from Batteries. Gould Storage Battery Corp., Trenton 7, N. J., exhibited the new "Thirty" battery which is designed to yield 30% more ton-miles, and last 30% longer than conventional mine locomotive and shuttle-car batteries. The battery grids are diagonally braced, covered with porous but hard oxides, wrapped in glass tape insulation, and enclosed in a hard rubber perforated envelope. Write for the company's Bulletin GB-781 describing the "Thirty" and new Kathanode batteries, also designed to yield lasting and uniform power for mine locomotives and shuttle cars.

New Diesel Engine. Cummins Diesel Engine Co., Inc., Columbus, Ohio, announced the new HR-600 engine which develops 165 hp. (maximum) at 1800 rpm. The company also exhibited a sectionalized model of the Cummins engine which contained illuminated lucite parts to demonstrate operating principles of various components.

Chain-Feed Drifter. Gardner-Denver Co., Quincy, Ill., exhibited three current models of automatic-feed drifting drills, and a new CM motor chain feed which is now available for drilling rounds requiring 6, 8, and 10-ft. steel changes.



SO VERSATILE

. . . because Schramm can furnish air for any compressed air job in your work; and versatile because there is a size and model Schramm to fit your individual needs! Just specify the size you need.

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PERSONAL NEWS

DIRECTORS OF the International Nickel Company of Canada, Ltd., recently inspected the company's mines and plants in the Sudbury district of Ontario, Canada. Left to right, they are: Front row, H. R. MacMillan, president, H. R. MacMillan Export Co., Ltd., Vancouver; The Rt. Hon. Viscount Weir, chairman, G. & J. Weir, Ltd., Glasgow, Scotland; Reg Halladay, Halladay & Co., Cresskill, N. J.; Robert C. Stanley, chairman of the board and president, International Nickel Co.; Dr. John F. Thompson, executive vice president, International Nickel Co.; James S. Duncan, president, Massey-Harris Co., Ltd., Toronto; Second row—R. Leslie Beattie, vice president and general manager in charge of Canadian operations, International Nickel Co., Copper Cliff; Ross H. McMaster, chairman, the Steel Company of Canada, Ltd., Montreal; John P. Bickell, chairman, McIntyre-Porcupine Mines, Ltd., Toronto; Laurance S. Rockefeller, president, Rockefeller Bros., Inc., New York; Sir William T. Griffiths, vice president in charge of operations in Great Britain and Europe, International Nickel Co., London; Dr. Donald H. McLaughlin, president, Homestake Mining Co., Berkeley, Calif. Third row—The Rt. Hon. Viscount Margesson, London; H. C. F. Mockridge, Toronto; William J. Hutchinson, treasurer, International Nickel Co.; Henry S. Wingate, secretary, International Nickel Co.; Grant B. Shipley, chairman, Elliott Co., Pittsburgh, Pa.

B. I. Nesbitt, consulting geological engineer, has been appointed representative for western Canada, the Northwest Territories and Alaska for Geophysical Explorations, Ltd., Toronto. His headquarters will be in Vancouver, B. C.

Hubert L. Williams, New York, has been appointed production manager of the Calumet division of Calumet & Hecla Consolidated Copper Co. He will be in charge of the electrical, construction, mechanical, mills, smelter, secondary and chemical departments of the company.

Pomeroy C. Merrill, who has been engaged as consulting mining engineer in Japan since last year, is now manager of an iron property in the Malay Peninsula. His address is: % Eastern Iron & Metal Co., Kuala Dungun, Trengganu, Malay States.

C. H. Burgess, Deerwood, Minn., recently appointed a deputy director of the Strategic Materials Division of ECA, left for Europe in October.

Bertold Wolff, formerly associated with the Ore & Chemical Corp., New York, has joined N. V. Groma, Inc., 50 Broad St., New York, as a managing director.

David D. Baker has been appointed manager of tungsten operations of United States Vanadium Corp. He will be in full charge of all operations at Bishop, Calif., and Henderson and Winnemucca, Nev. **John W. Hill,** acting superintendent of the company's activities in Colorado, has been appointed general superintendent and will have full charge of operations at Uravan and Rifle, Colo.

John G. Baragwanath, Freeport Sulphur Co., has returned from a five weeks' trip to Europe where he was employed by the Industry Division of ECA in Paris as a consultant on strategic materials.

Frank H. Bishop, vice president and general manager of the Hamme mine of the Tungsten Mining Corp., near Henderson, N. C., has resigned to return to Cleveland, Ohio.

Charles H. Dunning, director of the Arizona State Department of Mineral Resources, has been reappointed chairman of the mining committee of the Phoenix Chamber of Commerce. Serving with him will be **F. J. Elliot** and **J. Hubert Smith,** Phoenix attorneys; **Charles F. Willis,** secretary of the Arizona Small Mine Owners' Association, and **A. S. Lewis** and **W. F. Paine.**

Dr. and Mrs. John V. N. Dorr have returned from a three months' trip to Europe, during which they visited the offices of the Dorr Co.'s associates in London, Paris, Amsterdam, Brussells and Milan. Mrs. Dorr, in association with Erica Anderson, is producing a colored documentary film, "The Story of the Dorr Company." The Dorrs visited and filmed the mining operations of the Boliden Co., Sweden; the plant of Covallen Steel Works, Scotland; and the Salsigne mill near Carcassone, France, where an unusual process for treating gold bearing, arsenopyrite ore, developed by **Prof. M. H. Caron** of Delft University and the Dorr Co., is in operation.

David L. Watts, Hubbell, Mich., has been promoted to smelter superintendent of Calumet & Hecla Consolidated Copper Co. **H. C. Kenney** has been made smelter and chemical plant manager; **A. C. Kalk,** assistant superintendent of the foundry department, and **Donald B. Erskine,** chemical engineer.

Leslie Anderson, chief clerk for the Inland Steel Co. on the Cuyuna range, has been transferred to Inland's general office at Ishpeming, Mich.

John L. Massa has joined the staff of Jones & Laughlin Ore Co.'s research laboratory at Ishpeming.

J. V. Everett, geologist, has joined the engineering staff of Pickands, Mather & Co., at Crosby, Minn.

Stanley A. Easton, president, Bunker Hill & Sullivan, Kellogg, Idaho, was elected chairman of the Western Division, American Mining Congress for the coming year, at the meeting held in San Francisco in September. **William J. Coulter**, Climax Molybdenum Co., Denver, Colo., was elected program chairman and the board of governors are as follows:,

ALASKA: Roy B. Earling, U. S. Smelting, Refining & Mining Co.
Al Anderson, Alaska Miners Association.

ARIZONA: P. D. I. Honeyman, Inspiration Cons. Copper Co.
H. M. Lavender, Phelps Dodge Corp.
Charles F. Willis, Arizona Small Mine Operators Association.

CALIFORNIA: Worthen Bradley, Bradley Mining Co.
William C. Browning, Golden Queen Mining Co.
F. C. van Deinse, Yuba Cons. Gold Fields.

COLORADO: C. J. Abrams, Climax Molybdenum Co.
B. T. Poxson, Emperius Mining Co.
Robert S. Palmer, Colorado Mining Association.

IDAHO: J. Edward Berg, Federal Mining & Smelting Co.
Tom C. Russell, Anaconda Copper Mining Co.

MONTANA: E. S. McGlone, Anaconda Copper Mining Co.
Francis A. Thomson, Montana School of Mines.
Carl J. Trauerman, Mining Association of Montana.

NEVADA: Roy A. Hardy, Getchell Mine, Inc.
J. C. Kinnear, Kennecott Copper Corp.
Henry M. Rives, Nevada Mine Operators Association.

NEW MEXICO: William H. Goodrich, Kennecott Copper Corp.
G. T. Harley, International Minerals & Chemical Corp.
George Warner, Zuni Milling Co.

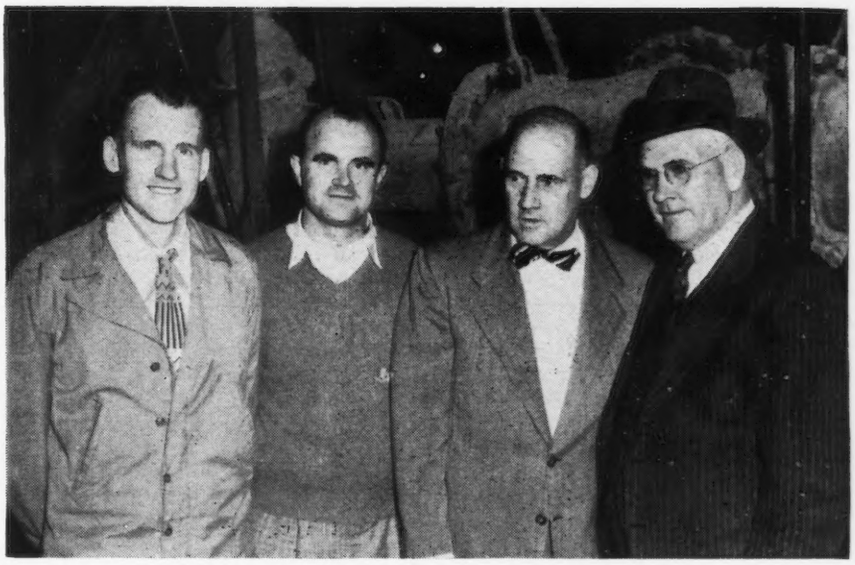
OREGON: S. R. Smith, Bonanza Mines, Inc.
S. H. Williston, Cordero Mining Co.
Fay I. Bristol, Bristol Silica Co.

SOUTH DAKOTA: Guy N. Bjorge, Homestake Mining Co.
N. P. Goodrich, Bald Mountain Mining Co.

TEXAS: E. McL. Tittman, American Smelting & Refining Co.
H. E. Treichler, Texas Gulf Sulphur Co.
Richard A. Young, American Zinc Company of Illinois.

TRI-STATE: Elmer Isern, Eagle-Picher Mining & Smelting Co.
J. H. Buchanan, Nellie B Mining Co.
O. W. Bilharz, Bilharz Mining Co.

UTAH: F. A. Wardlaw, Jr., International Smelting & Refining Co.
Cecil A. Fitch, Sr., Chief Consolidated Mining Co.
James K. Richardson, Utah Mining Association.



SHOWN ON ONE OF THE TRIPS taken during the meeting of the American Mining Congress in San Francisco in September are: Left to right—Clyde Breen, engineer, Yuba Manufacturing Co.; Louis Ware, Jr.; Louis Ware, president, International Minerals & Chemical Corp.; Charles Deaver, superintendent, Yuba Consolidated Goldfields.

WASHINGTON: J. J. Curzon, Howe Sound Co.
D. I. Hayes, American Zinc, Lead & Smelting Co.
Lewie Williams, West Coast Mineral Association.

John C. Reilly was recently appointed general manager of the Bayard Department of the United States Smelting Refining & Mining Co. according to an announcement made by **F. S. Mulock**, vice president and general manager of western operations of the company. In this position, which is a newly created one, Mr. Reilly has taken over duties in connection with the Bayard Department which formerly had been handled by officials in the Salt Lake City office of the company. **L. H. Duriez** continues as manager of the Bayard Department and **James Neuman**, assistant.

John L. Christiana, manager of Monsanto Chemical Co.'s plant at Monsanto, Tenn., has been named acting general manager of the Phosphate Division with headquarters in St. Louis. **R. R. Cole**, formerly general manager, has been appointed a member of Monsanto's executive committee.

M. K. Drury, assistant to the general manager of the Western Smelting Department of American Smelting & Refining Co., has been transferred from the San Francisco office of the company to New York.

Robert D. Shine, affiliated with the Kaiser enterprises since 1946, has been made supervisor of industrial relations at the Mead Aluminum Reduction Plant of the Permanente Metals Corp. at Spokane, Wash.

H. A. Charlton, mining engineer and secretary of Balfour-Guthrie, Ltd., left recently for Lima, Peru.

Carl Djuvik, of Jones & Laughlin Steel Co.'s engineering department at Pittsburgh, has been appointed resident engineer for the Benson mines at Star Lake, N. Y.

Frank Crawford, U. S. Bureau of Mines station, Birmingham, Ala., has been transferred to Berkeley, Calif. He was formerly at the Duluth station of the Bureau of Mines.

John Owens, geologist, has been transferred from the M. A. Hanna Co.'s office at Hibbing to the Cuyuna range where he succeeds **C. H. Burgess.**

Charles T. Weiler, Pittsburgh, has assumed his position as industrial engineer, a newly created department with the Inter-State Iron Co. at Virginia, Minn.

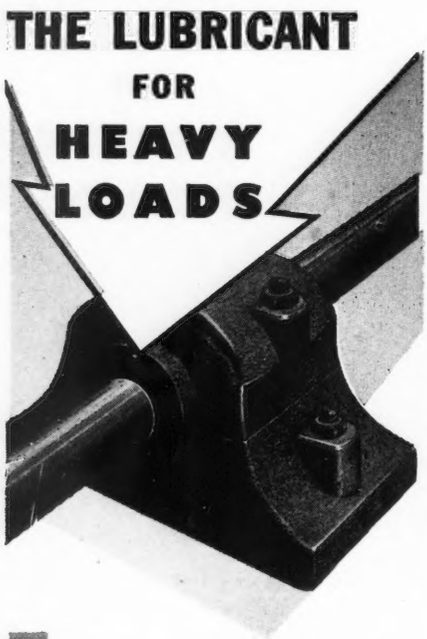
William J. McNelly, formerly with the Butler Brothers organization on the Mesabi range, is now with Pickands, Mather & Co. in the Cuyuna range engineering department.

Frank J. McGinn, formerly with Butler Brothers at their St. Paul office, is now at the Stanley Mining Co.'s Mary Ellen mine at Biwabik, Minn.

Hiram E. Reese, who has been in charge of the Butler Brothers mines in the Hibbing district, has resigned to become general manager of the W. S. Moore Co., miners and contractors, of Duluth.

B. M. Andreas, chief engineer of the Butler Brothers Mining Co., has been promoted to superintendent of the Nashwauk-Cooley district. **Harry Larson** succeeds him.

George C. Crangles, mining engineer and former Montana mining operator, is doing consulting work with headquarters at 2455 Union St., San Francisco.



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Personal News *(Continued)*

Forrest E. Allen, a former member of the faculty of Iowa State College in the department of mechanical engineering, and associate professor in charge of the instruction on metallurgy, has joined the development and research division of the International Nickel Co., Inc. With headquarters in New York, he will work on the company's educational program with universities and colleges in the United States.

Demetrio Andres, director of the Philippine Bureau of Mines, was present at the Geological Conference in London on Sept. 5, representing the Philippine Islands. At present he is observing modern mining methods and studying ore leases and administrative practice in the United States. **Nestorio N. Lim** is acting chief at the Bureau of Mines during his absence.

Ray Schulte, mining engineer, is located on the Isle of Cyprus, where he is employed by the Cyprus Mines Corp.

P. W. Chase of the Oliver Iron Mining Co. has been in Manila making a survey of iron, chrome and manganese resources for the company.

B. D. Stewart, Territorial Commissioner of Mines in Alaska, recently spent some time in Washington, D. C., conferring with the U. S. Geological Survey on coal and oil leases in Alaska.

David Mayers, Spokane, Wash., is on a six months' leave from the Kaiser operations to work for the United Engineering & Foundry Co. for the Societe Centrale des Alliages Legers. He left in October for Issoire, France, to act as engineer and consultant for a new aluminum rolling mill.

OBITUARIES

Charles E. Locke, 74, professor emeritus of mining and ore dressing at the Massachusetts Institute of Technology, died Sept. 24 in Cambridge, Mass., after a long illness. In 1930 he became a professor and retired in 1941 as professor emeritus and honorary lecturer in the department of metallurgy. He was a member of the American Institute of Mining and Metallurgical Engineers.

William C. Mast, senior construction engineer of the Chemical Construction Corp. and inventor of the drum-type sulphuric acid concentrator, died Sept. 17 in New York. He was 62.

Dr. Craig Arnold, mining engineer and inventor, died Sept. 14 at Dahlonega, Ga. He was 84. Dr. Arnold veloped huge electromagnets for lifting metals and invented a cushion socket to allow warships to fire guns without the lights going out. Shortly before his death, he patented the Arnold-Merick process for separating gold and sulphur.

Parks B. Van Dolah, mining engineer, died Sept. 9 in Cripple Creek. He was formerly superintendent of the Vindicator mine for the United Gold Mines Co.

Charles H. Hanington, president of the Colorado Museum of Natural History, died Sept. 10 in Denver.

Willard J. Smith, 72, mining and construction engineer of Hancock, Mich., died in September.

Samuel Richards, 72, retired mining captain of Calumet & Hecla Cons. Copper Co., died Sept. 10 in Detroit, Mich. At one time he was in charge of the Ropes gold mine at Ishpeming, and he was also captain at C. & H.'s Amygdaloid mine.

An Appreciation of Thomas A. Monahan

Thomas A. Monahan passed away in Nevada City on Aug. 26, following a short period of heart trouble. He was long prominent in gold mining in the Philippines and was later engaged in quicksilver mining and development in the western states. At the time of his death he was 49.

Tom Monahan was born in French Gulch, Calif., the son of Lewis C. Monahan, for many years superintendent of mines in Canada and California (including the Bully Hill in Shasta County, Calif.).

Following his graduation from White's Preparatory School in Berkeley, Tom received underground training from his father and at the Engels Copper mine. This period was followed by service with the 27th Engineers during World War I, in which he saw action at Chateau-Thierry, St. Mihiel and in the Argonne campaign.

Upon his return from the war, he was employed by the Denver Rock Drilling Co. In the late twenties Tom was an efficiency expert with Phelps Dodge at Jerome, Ariz. Subsequently he spent a decade in the Philippines, first with Amatok Gold Fields and later with Benguet Mining Co. at Baguio. He also managed Andre Soriano's Masbate gold property.

Tom reestablished himself on the mainland during the early forties by various consulting jobs in the West and in Alaska. He managed the Great Eastern mine in California and the Hermes in Idaho, both quicksilver producers. He improved the underground operation by driving haulage tunnels in the wall rock at the Hermes.

His recent work was for the Bradley Mining Co. on quicksilver and commercial rock development in California, and on the Oaks tunnel (silver-gold) venture near Silver City, N. Mex. For the past half year he had managed the Ancho-Erie mine near Washington, Nevada, County, Calif. He was a member of the AIME.

Tom Monahan had a ready wit and a fund of good stories. He will long be remembered by his many friends as a resourceful mining engineer and an extremely likable person.

WORTHEN BRADLEY.

An Appreciation of Dr. Edward Payson Mathewson

Dr. Edward Payson Mathewson passed to his reward on July 13, 1948, at the age of 84. He was born in Montreal in 1864, and graduated from McGill in 1885. His life was crowded with many and varied experiences. Dr. Mathewson had been a member of the Canadian Geological Survey, an assayer, chief metallurgist and superintendent of the Pueblo Smelting & Refining Co. in Colorado; manager of a copper blast-furnace plant at Autofagasta, Chile; manager of Anaconda's Washoe smelter at Anaconda, Mont.; an executive of the British Nickel Corp.; a metallurgical consultant in New York; and, in his later years, a member of the teaching staff of the University of Arizona.

Many honors came to Dr. Mathewson. He was awarded the medal of the Institution of Mining and Metallurgy, London, and the medal of the Mining and Metallurgical Society of America. He received the degree of Doctor of Science from the Colorado School of Mines and Doctor of Laws from McGill, his alma mater. He served one term as president of the American Institute of Mining and Metallurgical Engineers.

Dr. Mathewson was a man of unbounded energy that vitalized everyone associated with him. He was always willing to consider new ideas and proceed energetically with their development. This trait brought about many important improvements in copper metallurgy that marked a great advance in the art. At Anaconda, his handling of the smelter smoke problem by the installation of an extensive flue system and a large high stack, the development of copper blast furnaces from 15 ft. in length to a maximum of 87 ft., the increase in length of reverberatory furnaces from 50 ft. to the dimensions of the present day furnaces, were among the many developments that brought him world acclaim.

Dr. Mathewson's energy extended farther than his profession. His friendliness and interest in all civic affairs made him one of the most popular citizens of Montana, particularly in the city of Anaconda. The tribute paid to him on leaving Anaconda for his duties with the British-American Nickel Co., comes to few men. Schools were closed, a parade formed so that a large portion of the population of Anaconda was massed at the depot to bid him a regretful farewell. His whole-hearted application to the welfare of the University of Arizona and

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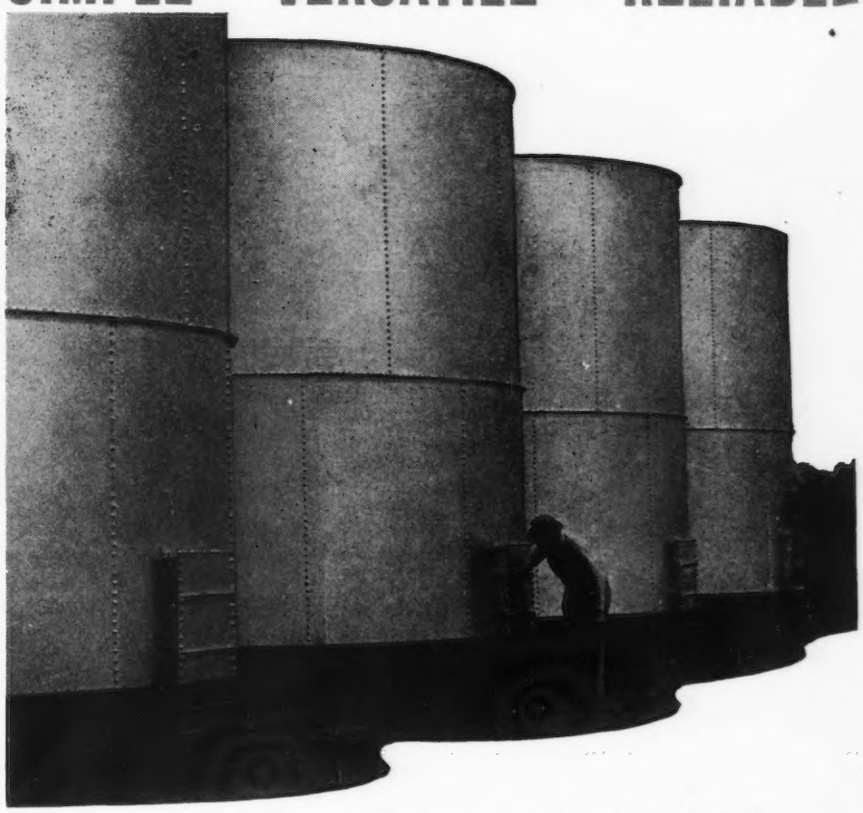

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REGIONAL NEWS

WORLD'S LARGEST, MOST MODERN phosphate elevator, on Seddon Island, Tampa, Fla., was recently put into operation by the Seaboard Air Line Railroad to complete delivery of phosphate rock to ships. Ships may anchor alongside the dock and be loaded through the hatches by means of a tower and chute which operates along a 450-ft. belt. About 1,500 long tons can be loaded in an hour.

IRON COUNTRY

Water shortage threatens to curtail mining operations—Tilden mine stops shipping until next season

★Due to shortage of water for hydroelectric plants it has been necessary to change some mine operating schedules and switch some heavy production to the night shift, so as to cut down the power peak. Strong pleas have been made to mining communities and the towns to save electric power wherever possible. Efforts are being made to keep clocks on daylight time to get the benefit of the additional hour of daylight in the evening. At Ishpeming, Cleveland Cliffs Power Co., which recently installed a 5,000-kw. diesel generating plant to help carry its heavy load, is busy adding a second 5,000-kw. diesel plant in the same building to keep the mines running. Levels of lakes in the area are down to the lowest point since 1900 when the records were started. With diesel fuel in short supply, it may not be possible to keep going until next spring.

★Cleveland Cliffs' Tilden mine at Ishpeming has closed its open pit operations for the season. It has continued the practice of stockpiling several boatloads of ore to be shipped next spring before summer operations start.

★At Inland Steel Co.'s Bristol mine, Crystal Falls, Mich., unwatering has been completed and mining started. Skip and cage hoists from the Holmes mine at Ishpeming have been rebuilt, with post brakes replacing the old band type. A second post brake has been added to the motor shaft of the cage hoist for added protection. The foundation is in for a second compressor in the engine house but the machine has not been received.

★The total shipment of iron ore from the Lake Superior region for the 1948 season to Oct. 1 was 65,168,444 tons. This includes 785,022 tons from Michipicoten and Port Arthur.

★Cleveland Cliffs Iron Co.'s mines in the Negaunee area have cleaned up their stockpiles, assuring a busy winter to replace them. Shipments from pockets will continue until navigation closes. The small amount left in the stockpile at the Mather mine will be shipped this season.

★Pickands, Mather & Co.'s Volunteer open-pit mine has shipped very little ore this season. M. A. Hanna's Richmond pit has had a fairly busy season.

★Leases on 1,066 acres of state-owned lands in Iron County, Michigan, were offered by the state at Lansing, Oct. 1, for exploration and mining purposes.

★Pacific Isle Mining Co., in addition to its operations at the North Uno, Lamberton and Chataco (formerly included in the old Chisholm) mines, is also scramming ore at the York mine at Nashwauk, operated by Coates & Tweed from 1917 to 1947.

★Union Construction and Dredging Co. is operating a suction dredge on Rabbit Lake on the Cuyuna range for Pickands, Mather & Co. to uncover the iron ore which lies under the lake bottom. The dredged material is delivered about 4,000 ft. away through a 20-in. pipe line.

★Oliver Iron Mining Co. is unwatering the Gilbert mine at Gilbert, Minn., in preparation for shipping in 1949. The last shipments were in 1945 when "trespass" ore from the Gilbert was mined by the Schley mine. The Schley, at that time, was being operated by the E. W. Coons Co. of Hibbing for the North Range Mining Co. The lease on it is now held by the Inter-State Iron Co.

★Bituminous coal supplies on hand at Duluth-Superior docks on Sept. 1, 1948 were 3,765,097 tons as compared to 2,829,875 tons one year ago—an increase of 935,222 tons. Nearly 28% of the bituminous supply is designed for the railroads, the balance being for commercial purposes.

★Butler Brothers reports that it has completed a 24x60-ft. addition to its general office at Cooley, Minn. The addition was constructed of pre-cast concrete slabs which were poured during the winter of 1947-48. The concrete slabs when poured were complete with bolts, angles and electrical connections. Doors and windows were also provided for at the time of pouring.

★After five years of waiting for approval of permits to prospect for iron

ore in six Minnesota lake beds, permission was given by Ray Nolan, Director of the Division of Lands & Minerals, on Sept. 25. The delay was due to court litigation in one lake bed area (Embarrass) and by a request of the State Conservation Department to survey another area to determine the exact boundaries. Applications were filed in 1943. The firms involved are the Evergreen Mining Co. (now part of M. A. Hanna Co.); Spensley and Haley Co. of Hibbing; R. M. Adams, Duluth, and Winston Brothers of Minneapolis.

★E. W. Coons Co. is operating the Julia and Commodore mines at Virginia. Shipments at the Julia will be completed in about two weeks with a small stripping program planned to follow. The Commodore will continue to ship until the season's end.

★M. A. Hanna Co. is drifting on the sixth level of the Bengal mine toward its adjoining Tully mine. This level is 200 ft. below the fifth. The Bengal was acquired from Pickands, Mather & Co. in exchange for the Zimmerman, thus giving each company adjoining properties instead of separated ones. Stephen Quayle, general superintendent for the Hanna company, stated that the stockpiles will be cleaned up during the shipping season. A busy winter is planned.

★Pickands, Mather & Co. are operating the old Forbes mine near Iron River, a former Jones & Laughlin Ore Co. property. It is now known as the Davison.

★At Inland Steel's Sherwood mine in the Iron River district the company is building a sewage filtration plant to handle overflow from the septic tank; also a settling basin to clear up the small amount of mine water that is pumped before it goes into the Iron river. This is to forestall any future complaints of stream pollution from the mine. R. O. Marsten, assistant superintendent, is in charge during the absence of Mr. Pearson. The latter is attending Harvard University where he is enrolled for a three-months course in industrial management.

★Jones & Laughlin Ore Co.'s Vicar mine at Wakefield has completed sinking its shaft and is cutting station and pocket in preparation for drifting. The new mine buildings are completed and occupied.

★M. A. Hanna Co. has completed shipments from its Buckeye, Douglas and Mesabi Chief plants. Argonne, near Nashwauk, is still shipping, as are the Cuyuna range mines.

★Pumping was begun at the Yates open-pit mine, near Kinney, Minn., in September. The mine was last operated in 1909 by the Consumer's Ore Co. (M. A. Hanna Co.). The property, the fee of which is owned by the State of Minnesota, is said to contain about 70,000 tons of ore. Rhude & Fryberger will do the stripping at the

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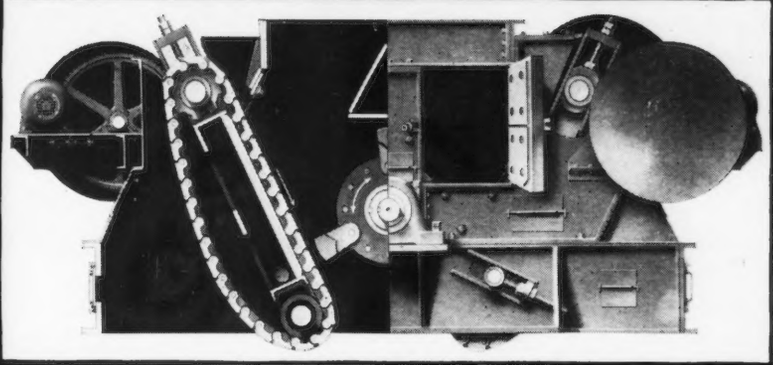

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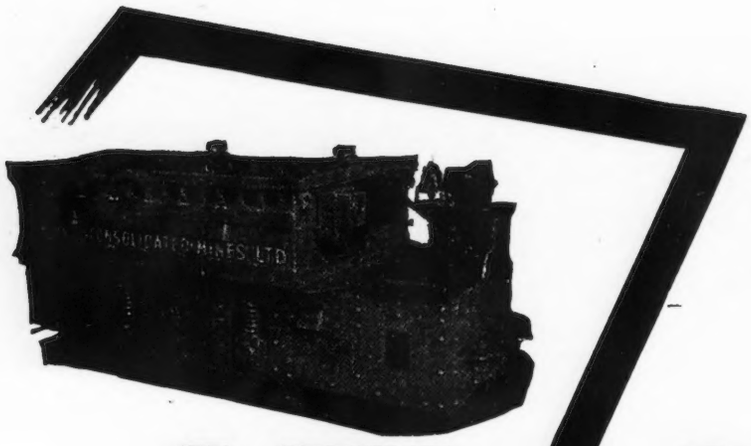

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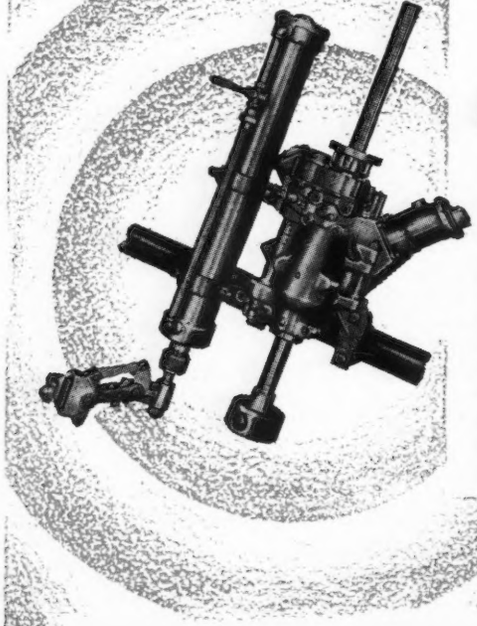

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Iron Country (*Continued*)

mine for the Warren S. Moore Co. who will operate.

★Skubie Brothers of Virginia, Minn., have nearly completed stripping at the Ajax mine at Biwabik, Minn.

★Stanley Mining Co. has moved the office of its Mary Ellen mine from Eveleth, Minn., to Biwabik, which is nearer to the property. Crude ore at the Mary Ellen mine is washed in the pit and concentration is completed at the Heavy Media plant on surface.

★Oliver Iron Mining Co. has temporarily waived the requirement for retirement at sixty-five, as applied to skilled labor only. This is because of shortage of men in this classification.

★The South Agnew mine loaded its first ore from the stripped area on Aug. 9. This came from the North Eddy property which lies just west of the South Agnew and which has been partially stripped to accommodate the west bank slopes. During September, however, some ore was loaded from the South Agnew itself. Stripping with the big dragline at this heavily overburdened mine did not begin until the spring of 1948.

★The Inland Steel Co. has announced that it will appeal the decision handed down by the U. S. Circuit Court of Appeals, upholding the NLRB order requiring the company to bargain with the USA-CIO over provision of the company's voluntary retirement plan.

★Oliver Iron Mining Co. announced Sept. 23 that construction of facilities for equipment maintenance and storage would begin soon at the Monroe and Sherman open pit mines near Chisholm. The company will build at each mine a 120x168-ft. locomotive and car repair shop. At the Sherman, a six-stall diesel-locomotive storage house, 48x120 ft., will be provided. Fuel storage tanks will have a capacity of 30,000 gal. at the Sherman and 20,000 gal. at the Monroe. Garages for trucks and passenger cars, change houses and locker rooms, as well as office buildings, will be built at both mines.

★This year's stripping at the Sherman called for the removal of 3,400,000 cu. yd. of rock and surface waste material. Full development of the Monroe property (now only partially completed) will require the removal of 12,000,000 to 15,000,000 cu. ft. of waste material.

Many of the seventy-five location houses at the Monroe mine, which the Oliver offered for sale last March to its employee tenants, have been purchased and moved away from the mine. This removal was made necessary because of the contemplated stripping operations.

★Pickands, Mather & Co. are drilling on the airport grounds at Crystal Falls, Mich., near the old Great West-

ern mine. Results have not been announced.

★The Tobin mine at Crystal Falls has almost cleaned up its stockpiles and anticipates a busy winter with 150 to 200 men employed. E. H. Anderson is superintendent at this Republic Steel Co. property.

★Speaking before the Buffalo, N. Y., section of the Assn. of Iron & Steel Engineers recently, Julian D. Dickerson, chief metallurgist for the Buffalo plant of Republic Steel Corp., warned that steel companies with plants on the Great Lakes must "within relatively few years" plan for plants to concentrate low-grade iron ores into materials usable in their furnaces, against the time when lake ore supply becomes insufficient. He mentioned the possibility of Labrador and the Steep Rock region ultimately providing ore for lake furnaces as well as the Eastern Seaboard.

MICHIGAN

Calumet & Hecla employees sign new contract—Quincy to operate smelter at Ripley

★A strike of Calumet & Hecla Consolidated employees was averted the morning of Sept. 27 when the Calumet & Hecla Copper Workers Union, CIO, accepted a new contract providing for an increase of 5c. per hour, health and accident insurance, and group accidental death and dismemberment insurance to be provided by the company. The maintenance of membership provision was eliminated.

Gene Saari, representative of the International Union of Mine, Mill and Smelter Workers, CIO, and John Sitar, president of Local 584, counseled against a strike. The executive board of the union stated that discussions on hospitalization will continue.

★Calumet & Hecla's new zinc-lead project in southern Wisconsin is progressing according to schedule. The shaft is more than 100 ft. deep. The mill purchased at Platteville from the War Assets Administration is being dismantled preparatory to moving it to a new site at the mine. Flowsheet for the mill has been worked out and details of machine location and structural work are about complete.

★The Quincy Mining Co.'s smelter at Ripley, Portage Lake, was to be recommissioned in October. Repairs both inside and outside the plant have been completed. This will give the district two smelters, the other being the Calumet & Hecla plant at Hubbell.

★A modernization program for Calumet & Hecla's foundry has been authorized by the management. New equipment for sand conditioning and control, modern moulding machines, roll-overs and extensive steel flask

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AT LEFT IS TEMPORARY HEADFRAME of Mather "B" shaft of Cleveland-Cliffs Iron Co., Negaunee, Mich. Mather "C" shaft, right, 100 ft. from "B" shaft, is made up of four sets of steel at 7-ft. spacing and is used for trying out innovations without interfering with shaft-sinking at "B." When the pictures were taken in August, a new oil cylinder-operated clam-shell was being tested.

Michigan *(Continued)*

equipment have been placed on order and will be installed in the near future. The foundry, it is stated by the management, will be one of the most modern in this part of the country and is part of Calumet & Hecla's diversification program.

During the war years numerous orders were taken from outside customers as a service to war industries and individual consumers not having adequate sources of supply for castings. This outside business will be continued, in addition to meeting the company's own requirements. Recent developments on the Minnesota iron range, and expansion of industrial consumers within a 250-mile radius of Calumet, Mich., have opened up an attractive market for foundry products.

★Calumet & Hecla Consolidated Copper Co. directors, at their August meeting in Boston, took no dividend action. E. R. Lovell, president, stated that the rich tailings at the Lake Linden reclamation plant had been exhausted and that the loss of this source of low-cost copper will seriously affect earnings of the Calumet division. The management hopes to offset this, eventually, by profits from new activities.

GEORGIA

★New Riverside Ochre Co. at Cartersville, J. R. Dellinger, managing partner, is opening a new area for mining barite. Approximately 12 acres have been tested in a 40-acre tract. The property is leased from New Jersey Zinc Co., one of the first companies to mine this mineral in the area. Considerable overburden will have to be stripped. The company has purchased a new Link Belt Speeder power shovel and three Euclid trucks.

Production of both barite and ochre is running ahead of last year, with foreign and domestic demand for ochre showing an increase. The J. R. Dellinger plant at Tiff, Mo., which was destroyed by fire August, 1947, has been rebuilt with many improvements. The Dellinger and Duckett plant nine miles northwest of Athens, Tenn., is operating at about the same rate as last year. As a hedge against the effect of wet weather this winter, the mine is stocking crude ore to be milled.

★Mining interests in the South will enter a strong protest against the proposal to increase freight rates on mineral products, especially to eliminate the differential in rates between raw and ground products. Arguments will be presented to the ICC for retaining the differentials, because of the difference in value.

TRI-STATE

Nellie B company acquires properties of Evans - Wallower — Buckingham mines, Snapp mill close

★The month of September in the Tri-State zinc-lead mining field was marked by a resumption of operations by the Eagle-Picher Mining & Smelting Co. and those companies dependent on its Central mill following the settlement of the two-months strike on September 4. Production of blende in the district, which had dropped to around 1,500 tons weekly during the strike, had more than doubled by the first of October.

★Acquisition of the mining and milling properties and holdings of Evans-Wallower Zinc, Inc., in the heart of the Picher mining field by the Nellie B Mining Co., has been confirmed. The latter company took over the properties—including 200-acre lease, the No. 4 mines and mills and all mining and milling equipment—on September 8 and started milling operations on September 21, but the sale was not finally approved until a meeting of Evans-Wallower stockholders at Cardin, Okla., on September 27.

The Nellie B company several weeks ago acquired the properties of the Rialto Mining Corp. adjoining that of Evans-Wallower, and early this year purchased the holdings of the Marcia K Mining Co. and the Davis-Big Chief Mining Co., just east and south of the Rialto and Evans-Wallower Properties. The company now holds nearly two sections of mining property in the southeast-central part of the Picher mining field.

J. H. Buchanan, formerly connected with the Atlas Powder Co. in Chicago, is manager of the Nellie B company's Tri-State properties. The Evans-Wallower properties, managed in recent years by F. W. Gooch of Joplin, formerly were held by the old Golden Rod Mining and Smelting Co.

★Dale Mining Co. has acquired from Earl Keeton old mine leases in the Pioneer mining district. The low-heading mines bordering Shoal Creek are being dewatered and ore will be treated at the company's Stark City mill.

★Ross Blake, of Joplin, Tri-State manager of the Kansas Explorations, Inc., a subsidiary of the St. Joseph Lead Co., has announced the closing of the Buckingham mines and Snapp mill of the subsidiary. The company employed approximately 50 men at the properties, which are situated northwest of Oronogo. Although some of the mine headings showed a fairly good grade of ore, there was not enough tonnage of mineable ore in sight to justify an additional pumping cost and make the operation profitable. Mr. Blake explained that as the mine had been opened up, inflow of water had increased, which would have called for additional 16-in. drill holes for the installation of pumps.

Mining equipment from the Buckingham property is being moved to the Snapp mill for storage at the present time, awaiting more favorable operating conditions.

NEW MEXICO

Potash plant operating at maximum capacity—Purchase depot and fluorspar mill for sale by WAA

★Two New Mexico war-time mineral producing plants advertised for sale by the War Assets Administration are the purchase depot at Deming, N. M., used during the war as a purchase, storage and sampling headquarters for needed minerals from southwestern New Mexico, and the 300-ton-capacity fluorspar mill at Gila, Grant

County, consisting of mill building, shop building, oil house, sample and assay building, office and supply building. This plant was operated during part of 1947 under contract to the Shattuck Denn Mining Corp. to clean up a large stockpile of fluorspar ore unused during the war. The Shattuck Denn operators rehabilitated the mill and carried on an experimental metallurgical program during their period of operation.

★International Minerals and Chemical Corp.'s potash division in Eddy County is operating at maximum capacity to meet increasing potash salts demand. A statement issued by the corporation's president, Louis Ware, based on a report of the fiscal year ending last June 30, revealed that the tonnage production of potash from that plant had exceeded that of the previous year. It was stated that some of the increase in output was due to process improvements. Mr. Ware said, "While the potash plant has operated with higher wages and other increased costs, larger volume and greater efficiency have provided a profit which exceeded that of the previous year."

Construction commenced early this year on a major plant addition, which, with other changes at the refinery, will provide a production of chemical grade potassium chloride and an improved quality of potassium sulphate for agricultural and industrial uses. These new facilities are expected to be in operation by next spring and will mark International's entry of the potash division into the heavy and industrial chemical fields.

★A strike that was called against the Burro Mountain branch of Phelps Dodge Corp. at Tyrone and involving about 40 men has persisted since Aug. 19.

★The State Mine Inspector's office has just completed a report based on the fiscal year ending June 30, 1948, which shows substantial increases in production of all metals and nonmetallics other than coal for that period. Among the metallics, zinc shows the greatest percentage increase over the previous fiscal year, while pumice has taken the largest strides in the non-metallic field.

★Banner Mining Co., six miles south of Lordsburg, Hidalgo County, resumed operation in late September after the settlement of a strike which began on July 26. Allan Bowman, general superintendent of the operation, states that full production was resumed in October.

★The Peru Mining Co., of Silver City and Hanover, Grant County, is now producing from its Pewabic mine. This mine was closed down at the ending of the premium price plan in June, 1947, and did not present economic possibilities until the last raise in lead and zinc prices. The opening of the Pewabic provides employment for an additional 100 men on a two shift basis.

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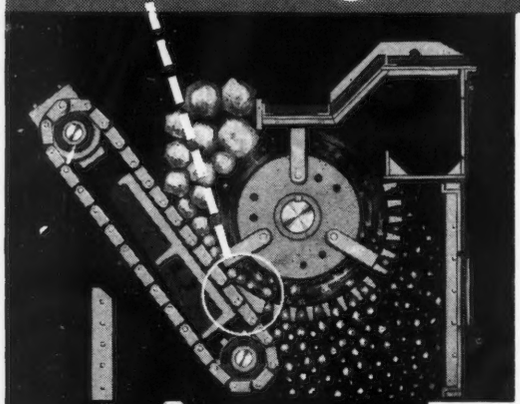

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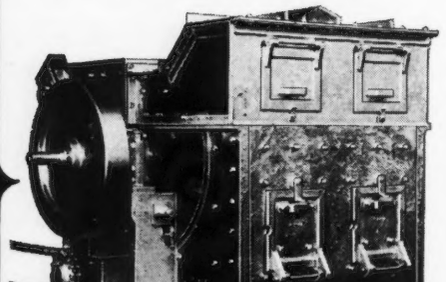

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New Mexico *(Continued)*

★The old Nordstrom property in Bear Canyon, Sierra County, which is now named the Carbonate, is being opened by Robert Burns and a crew of men. A new hoist and compressor have been installed at the 50-ft. shaft on the property. The shaft has been reconditioned and cleaned and a 72-ft. drift started across the wide vein. High grade lead-sulphide and lead-carbonate ore has been encountered at the bottom of the shaft in mining widths. Shipments were initiated in early October.

ARIZONA

Operators plan mills for Cerbat district—New company to develop Copper World mine and construct mill

★Robert Payne has leased the New Moon mine, Mohave County, as well as the 75-ton Keystone mill to treat the ore. He will also accept custom ore.

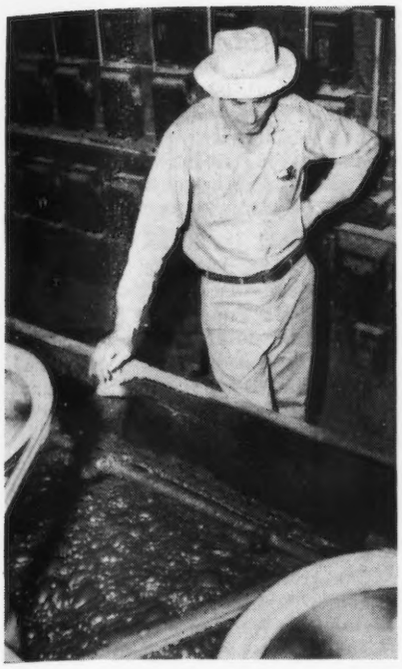
★W. J. Howard and V. H. Hazen, operators of the Golden Gem mine in the Cerbat district, plan the construction of a 250-ton custom mill for the selective treatment of lead, zinc and silver from the mining districts near Chloride and Kingman.

★Also planned for the Cerbat district is the $150,000, 100-ton selective flotation plant, to be operated by G. C. Moore, J. K. Higenbotham and Joseph Terry of New York and Los Angeles, under the firm name of Basic Metals Milling Co. The mill is designed to meet government requirements for the stockpiling of strategic metals and is capable of treating several types of ores.

★The Omega Metals Co. has been organized by George F. Reed and George A. Freeman to develop the Copper World mine. They also plan construction of a 200-ton mill at the site of the Boriana mine, which will first treat the Boriana tailings for tungsten and the dumps for copper and zinc.

★The newly organized Oracle Instrument Co., Oracle, will turn out an inexpensive Geiger counter to meet the increasing prospector demand occasioned by the recent discovery of uranium ores in northern Arizona.

★According to the Arizona Department of Mineral Resources, a representative of the Atomic Energy Commission was to be sent to Phoenix early in October to determine whether recently discovered uranium areas in Northern Arizona qualify under the AEC "high-grade uranium prospecting" program. Samples from the Hack's Canyon uranium mine aroused optimistic interest at the Commission's New York laboratories.



VERN GIVEN, mill superintendent for St. Anthony Mining & Development Co., Ltd., Tiger, Ariz., has improved the flotation of oxidized lead ore (see E&MJ, April, 1948) to the point where on heads running 4.60% Pb, mostly cerussite, the mill makes a 57% concentrate and a 0.27% tailing.

★In the Miami Copper Co. vs. Schoonover litigation the State Supreme Court held that a "bonus" was not to be considered as wages and that only the guaranteed wage could be considered in determining the average monthly wage.

★The Magma Copper Co., Superior, has started breaking-in operations at its new 1,500-ton copper reduction plant. The crushing plant, with a rated capacity of 200 tons an hour, has been in operation for several months. The old mill is to be dismantled.

★Byron Moyer, Yarnell mine operator, has taken over the Congress mine, near Congress, and has bought the 300-ton cyanide slime plant which was constructed several years ago to treat the old tailings.

The mine, idle since 1904, will be reopened through the No. 3 shaft and first work will be undertaken on the 650, 1,000 and 1,100-ft. levels on the Congress vein.

★Mining and milling operations started last year in Tombstone by Operations, Inc., suspended because of organizational difficulties, have been resumed under direction of the Billingsley Machinery Co., Inc., of Dallas, Texas. Development work in the Dragoon Mountains has been under way for some time since the Billingsley company took over. Zinc-lead ore with some silver has been mined and a new tunnel is being driven to open additional orebodies.

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Arizona (*Continued*)

being mined at the Kaibab open-pit mines near Jacob Lake. Values are said to average 6% and occur as carbonates and oxides in lime with 7-ft. sandstone overburden. The mineralized zone is approximately 20 ft. wide and has been mined for 700 ft.

★Silica sand is being mined from Meteor Crater, 19 miles from Winslow in Coconino County, under direction of E. E. Pomeroy. The process ranges from 30 to 100-mesh and the product is used in ceramics and glazing, foundry work and the manufacture of glass.

★Victoria Gold Mines, Inc., at Oatman will move a 250-ton cyanide plant to the mill site and expand operations to accommodate custom ores from other producers in the vicinity, R. P. Jones, president, has announced.

COLORADO

Auto tunnel will go through Mosquito range — Lackawanna flotation mill is working full time

★The long range program for deep mining in the Cripple Creek gold district is steadily progressing. The laterals being driven from the 3,000-ft. depth of the Portland No. 2 shaft are advancing. At last report in September, the lateral to the Cresson mine had been driven 900 ft. and the lateral to the Vindicator mine 775 ft. The Cresson shaft is 2,310 ft. deep and the Vindicator shaft 2,133 ft. The lateral to the Cresson will total about 4,000 ft. and to the Vindicator about 4,500 ft.

★The Colorado Mining Association is sponsoring a movement to obtain sufficient gold to regild the dome of the Colorado State Capitol and help pay for the project. Contributions of gold ore, concentrates, nuggets or specimens are being solicited.

★Shenandoah-Dives Mining Co. at Silverton produced concentrates totaling $478,955 in the first half of 1948 compared with $592,274 for the same period a year ago. The inability to keep its mill busy, due in part to lack of experienced miners, a run of poor grade ore and considerable expense in tunneling to reach a new area, resulted in a loss of $87,954 for the company during the first half of this year; however, the mine was reported to be doing considerably better in the third quarter.

★At the old Eureka mine on Treasury Mountain in the Elk Mountain mining district the operators have eight men employed in the tunnel shooting out the ice that blocks the workings. The miners are using breast augers and other hand tools until more modern equipment can be packed up to the

mine. The vein is said to be 14 ft. thick, showing lead, zinc, copper and silver. It will run between $80 and $100 a ton at the smelter, R. E. Simpson, one of the operators, estimated. Pack mules will be used to bring down the ore this fall, but the three partners plan to construct a 2,000-ft. aerial tramway next spring and truck the ore to the railroad at Crested Butte.

★The Lackawanna selective flotation mill northeast of Silverton was recently acquired by the Osceola Mining and Milling Corp. Supervised by one of the corporation's partners, Les Larson, the mill is doing around-the-clock duty concentrating ore from the Osceola mine.

★Gold receipts at the Denver mint in August totaled 49,780 oz., valued at $1,742,303, compared with 43,058 oz., valued at $1,507,051, for August, 1947. Silver receipts for the month amounted to 10,957 oz. at $9,687, compared with 14,181 oz. at $12,671, in August, 1947.

★After three years of rehabilitation work, the Mendota mine at Silver Plume has started production and it is expected that 1,000 tons of ore will be shipped per month. The ore is said to average $40 in silver, lead and zinc.

★A mining and transportation auto tunnel through the Mosquito range into Leadville is to be pushed to completion. The tunnel will make possible the trucking of ores from Park County mines to the Leadville smelter. By the new route the distance from North London mine in Park County will be only 17 miles, against the 92 miles the ore is now trucked from Fairplay through Buena Vista to Leadville. The new tunnel, a pilot bore, will only be 2,600 ft. in length and will cut through the North London fault, where ore veins are expected. The first 500 ft. will probably require 60 to 70 days.

★U. S. District Judge Symes dismissed an indictment against six vanadium corporations and five individuals named in a federal anti-trust suit. In its stead he authorized the Justice Department to file a substitute information which charges the concerns with conspiracy to monopolize and restrain interstate trade in ferrovanadium and vanadium oxide, sister ores of uranium. The Vanadium Corporation of America, U. S. Vanadium Corp., Union Carbide & Carbon Co., Electro Metallurgical Co. and Electro Metallurgical Sales Corp. are named in the new information. The Atomic Energy Commission notified the Justice Department that under the original indictment the defense or prosecution would have been forced to disclose the location of the nation's vital deposits of vanadium.

★It is reported from Ouray that the Newmont Mining Co., of New York City, operating the Treasury Tunnel through its subsidiary, the Idarado Mining Co., has purchased the Atlas mine group at Telluride.

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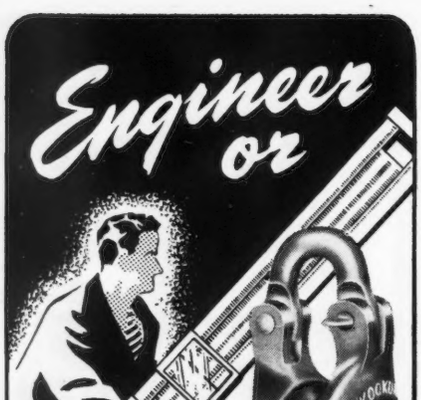

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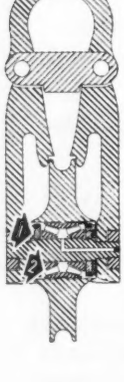

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Colorado *(Continued)*

★The Silver Shield Mining & Milling Co. hopes to complete its mill at Ouray by December 15. In early October, nearly all machinery had been placed, ore bins completed, and the mill building was being erected; office and living quarters had been renovated. The company will handle custom ores as well as ores from its Wanaka property.

UTAH

Hercules Powder employees choose Oil Workers Union—Anaconda purchases Tooele property

★Efforts are being made by Utah mine operators to have a hearing scheduled for Salt Lake City or some other intermountain point to air proposed changes in policies of the Wage-Hour Administration concerning block leasing of mines.

★A case in which the Utah State Supreme Court held that the State Workmen's Compensation Act is the employee's exclusive legal remedy in a case of compensable injury or disability from one of the occupational diseases mentioned in the act, has been appealed to the United States Supreme court.

The State court decision was handed down last spring in the case of Nick Masich against United States Smelting, Refining & Mining Co., seeking damages for disability from silicosis allegedly contracted while he was employed by the company.

★Progressive Metalworkers Council now has 13 Utah and Nevada locals with a membership of approximately 3,200, reports George J. Wilde, subregional director. Newest local to affiliate is Bingham Underground Miners Local No. 2 which had seceded from International Union of Mine, Mill & Smelter Workers last spring.

John J. Driscoll, Waterbury, Conn., PMC chairman, said his union's record is excellent in Utah and Nevada; that MMSW had up to 24 full-time workers, including two professional publicity men, trying to block PMC, while his union had only two representatives there.

★Members of the women's auxiliary to the International Union of Mine, Mill & Smelter Workers voted to sever ties with MMSW and to go on record encouraging "formation of a new and dynamic ladies' organization free from the taint of Communistic or other un-American philosophies" at the opening of their three-day annual convention Sept. 13 in Salt Lake City.

Mrs. Mary Orlich, Butte, Mont., who has headed the auxiliary, and Mrs. Dora Young, Park City, secretary, sponsored a resolution supporting the national CIO program opposing the third party movement and indorsing the Marshall plan.

★The Utah chapter, American Society for Metals, has been organized with W. C. Dyer, superintendent, metallurgical, chemical and inspection department, Geneva Steel Co., chairman. E. H. Snyder, president, Combined Metals Reduction Co., discussed common interests between ferrous and non-ferrous metals industries at the organization meeting Sept. 28.

★Park Flag Mines Co. is reported to have given a five-year lease on its property, located between the Silver King Coalition and Park Utah properties, Park City, to Billy Gay, former superintendent of the operation before it closed several years ago.

★The Utah State Supreme Court has been asked by Columbia Iron Mining Co. to review a State Tax Commission order which more than doubles the company's mine occupation tax. (E& MJ, Oct., p. 122.) The tax commission had held that "cost plus 10c. per ton" price under which the mining company sold to Geneva Steel Co. did not represent the actual value of the ore. Fixing the value of the ore at $1.55 per ton raised the company's gross income from $1,325,917 to $2,893,312.

★One hundred ten employees of Hercules Powder Co. at Bacchus, formerly affiliated with International Union of Mine, Mill & Smelter Workers, have designated the CIO Oil Workers' International Union as their bargaining agent. According to William S. Povall, newly appointed representative for the oil workers in Utah, Idaho and Colorado, the vote at the NLRB election was unanimous.

★National Tunnel & Mines Co. holdings at Tooele, including the Tooele-Bingham drainage bore, were sold Oct. 4 to the only bidder, Anaconda Copper Mining Co., for $500,000.

NEVADA

Mill of 500-ton capacity operating at Austin Jumbo mine—Tax figures reveal lower profits, greater tonnage

★Profits earned by Nevada's foremost metal producers in the first half of the current year registered a sharp decline below those for the second half of 1947, county tax figures reveal. Kennecott Copper Corp., Nevada division, reported net profit of $1,886,933 for the period this year as against $2,935,930 for the first half of 1947. Profit of Consolidated Coppermines Corp. for the six months of 1948 was $103,884 compared with $533,459 last year. Both companies produced a larger tonnage this year from open-cut mines, but the product was of lower grade and the decline in earn-

ings was ascribed to mounting costs.

★Water in the flooded four-compartment Fad shaft of the Eureka Corporation, Ltd. on Ruby Hill had been lowered in late September to the fifth, or 2,000-ft., level and additional pumps and Diesel power units were being provided.

★Operation of an amalgamating mill at the Austin Jumbo gold mine in the Awakening district, Humboldt County, has been resumed by a group of Nevada and Utah men who have leased the property from George Austin and relatives of Reno. Mill capacity has been increased to 500 tons per day and early full-scale operation was in prospect at the mine. The new lessees, composing the Red Ledge Mining Co., include Hollis E. Chatwin of Winnemucca, A. T. Kirkman of Lovelock, with Reed Richards and C. E. Bartlett of Salt Lake City.

★Seeking ore in new territory on the 300-ft. level of the Rio Tonto copper mine at Mountain City, northern Elko County, John Crosby and Elko associates have leased the main shaft of the formerly productive mine which, with 350-ton flotation mill and full equipment, has been offered for sale by the Anaconda Copper Mining Co.

★Claims at the southern end of the Divide district, Esmeralda County, developed to some extent during the Goldfield boom period, are being developed by the Gold Seam Mining Co. under direction of Charles Mayer of Tonopah. The 200-ft. main shaft is to be retimbered. Mayer reported ore of shipping grade available on the 100-ft. level and planned to truck the product to the custom mill being built at Goldfield by the Newmont Mining Corp.

★Long-hole drilling, both vertical and lateral, has been undertaken on four levels of the productive Mizpah mine of Tonopah Mining Co. of Nevada. The search for new orebodies is conducted by Clyde Russell, who late last year obtained a long-term lease on the mine with the purpose of granting sub-leases. Some 10 sets of lessees have continued to produce ore sampling $20 to $30 per ton and trucked it 200 miles to the McGill smelter of the Kennecott Copper Corp.

★Tonopah Divide Mining Co., E. L. Cleveland of Reno, president, has been sampling the old Keystone mine at Manhattan and has taken a lease and option on the property, which was said to have sufficient ore in sight to warrant mill construction.

★The Stokes antimony mine in the Big Creek district, southern Lander County, has been acquired by California men who were preparing to enlarge the concentrator and were constructing a road to the mine, high on a mountain ridge.

★A new company, the Uranium Vanadium Exploration Co., has established Reno headquarters and has engineers

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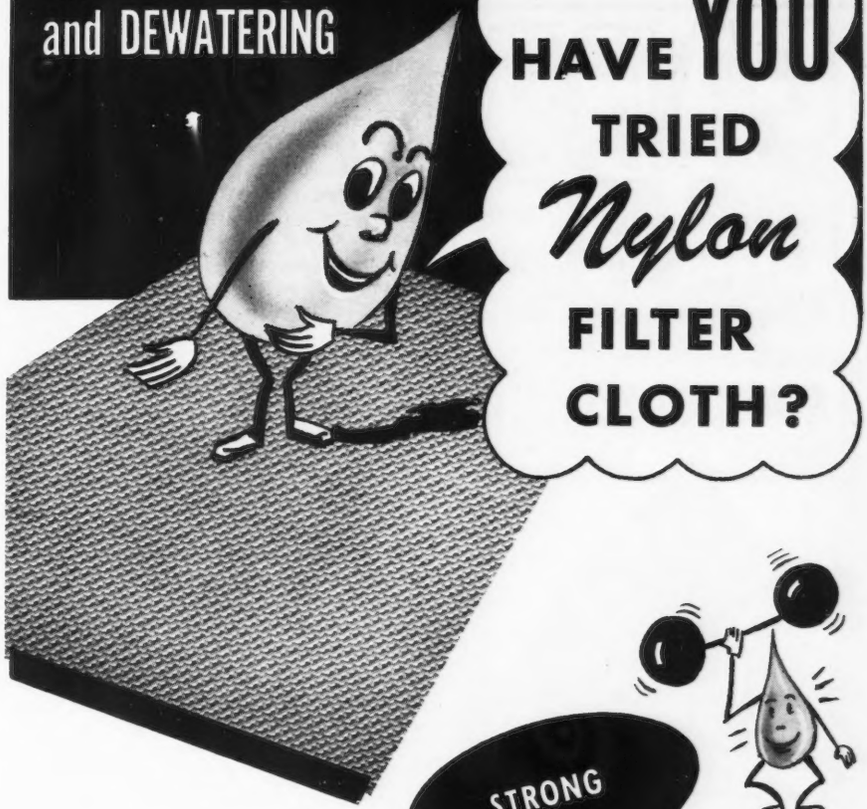

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Nevada (*Continued*)

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★The property of the Old English Gold Corp. (E&MJ, Sept., p. 127) is in Nye County, where the company is mining and milling gold ore, not siliceous copper-silver ore as previously stated. The president of the company reported late in September that heads going through the recently completed 50-ton flotation mill were carrying over $20 per ton in gold.

★Last month it was erroneously reported that Consolidated Coppermines Corp. had discontinued underground mining through its Morris-Brooks shaft at Kimberly. According to the general manager of the corporation, approximately normal production of underground ores is being maintained through this shaft. There is no intention at this time to discontinue the production of underground ores, though part of Consolidated Coppermine's production does come from an open-pit operation in the west extension of the Kennecott pit.

IDAHO

Development work at Golconda proves good ore — Spokane-Idaho mine deepens shaft to 1,400 level

★Dr. A. W. Fahrenwald, dean of the Idaho State School of Mines, announcing development of a new method of crushing ore to a fine powder for flotation, cyanidation or leaching recovery processes, reports that one unit of horsepower in the new process produces two and a half times as much crushed ore as the ball mill and with only a fraction of the steel consumption. In the new process the rock is continuously subjected to pressure pulsations and the grinding is largely by the rock itself and not by steel surfaces. The immediate importance of this research is that it has demonstrated for the first time that new processes for effective fine grinding at low costs are possible.

★Development work on the recently discovered silver-lead orebody at the Golconda mine during September has proven the vein fissure to be 6 ft. wide for the past 100 ft. of drifting and a raise just started showed 3½ ft. of clean silver-lead ore that will average better than 60% lead. The drift work has so far produced around 1,500 tons of high-grade mill feed which is being stockpiled, awaiting mill treatment. The company has some 300 ft. of Golconda ground ahead and east of the present showing, and has a 50-50 working agreement with the adjoining Square Deal property. Present showing is at a depth of 1,000 ft.

★The Spokane-Idaho mine on Pine Creek has recently deepened its shaft to the 1,400 level, where it has developed a zinc-lead ore deposit by drifting for 750 ft. in length. Stopes have been opened on the 1,000 and 1,200 levels and are producing a mill feed containing 10 to 12% zinc and lead, zinc predominating. The company's milling operation has been increased from 150 to 175 tons per day. In addition to regular mine production, the company is planning to mill the old mine dumps, estimated to contain 10,000 tons of low grade ore. J. C. Kieffer is general manager.

★Bunker Hill & Sullivan M. & C. Co. reports net income of $2,238,996 from the sale of minerals for the first six months period of 1948 amounting to $20,645,000, compared to sales of $15,528,714 in the same period of 1947.

★Sunshine Mining Co.'s ore reserves are estimated at 1,270,915 tons above the 3,700 level as of June 1, 1948. Sunshine's share of this tonnage amounted to 808,302 tons, because of production and operating agreements with associated companies. Of this total tonnage, 441,395 tons are in the Sunshine vein proper; 294,085 in the Omega area in the Chester vein, in which Polaris shares 50%; 331,875 tons in the Rotbart area, two-thirds of which is owned by Polaris and Silver Dollar; 128,560 tons in the Rambo area, 50% of which is owned by Silver Syndicate; 50,000 tons in the Yankee Girl vein, 16% of which is owned by Metropolitan, and 25,000 tons in the Yankee Girl vein in Sunshine Consolidated ground, 50% of which is owned by Sunshine. The blocked out ore has an estimated metal content of 39 oz. in silver and 2.1% lead, or a value of $40 per ton.

★The Bradley Mining Company's antimony smelter at Stibnite, Idaho, which is to cost $1,250,000, is being delayed in construction because of inability to get delivery of structural steel. The smelter is designed primarily to treat ore from the company's Yellow Pine mine, but will eventually treat custom ores also.

★Polaris Mining Co. is now driving a raise up from the 3,000 level on the orebody encountered in Silver Summit ground, after drifting on the vein for 1,000 ft. and proving about 800 ft. of high grade silver-copper ore in width varying from 18 in. up to 14 ft. The present raise shows a width of 14 ft. of exceptionally high-grade ore. Hand samples will run around 25% copper for some types of the ore and 1,000 oz. in silver. The company plans deeper shaft development on this ore showing, starting an independent shaft on the 3,000 level, and also plans milling operations when its milling plant becomes available around the first of the year.

★According to George A. McDowell, state mine inspector, thorium has been found in the monazite sands of the Boise basin and the McCall area

of central Idaho, and sands are being dredged and the metal separated by magnetic process.

★Settling ponds at Hope mine at Clark's Fork, washed out by high water last spring, have been replaced by four new ponds, according to company officials. Work will start immediately on extending the crosscut on the 700-ft. level to intersect the Elsie K vein to the east. The mine has been shipping at the rate of two cars per month since last January.

★The Hunter Mining Co. at Mullan is now milling the old mine dump from the upper working level.

★The open-pit Dewey mine of Gateway Gold and Copper Co., Inc. has been working since mid-August and producing about three and one-half tons of gold-bearing concentrates a day. Plans are to continue through the winter. Approximately 300,000 tons of ore have been blocked out.

★At Liberal King Mining Co., whose property is under lease and bond to the Sunset Minerals Co., a 150-ton milling plant is in operation and a wide vein of complex zinc and lead is being developed.

★Pumping has started at the Hypotheek mine in Shoshone County and material and equipment is being assembled for installation at the 500-ft. level of the shaft. When the shaft is unwatered to the 700-ft. level the 2,300-v. electric line will be taken to this depth and a station pump installed.

★Clayton Silver Mines in Custer County reports that the milling plant at the mine is now operating on a 24-hour basis and is turning out two and one-half carloads of lead concentrates and one car of zinc concentrates per month. Lead shipments net about $12,000 per car for silver and lead, and the zinc concentrates about $2,000.

MONTANA

Federal Mining & Smelting examines Iron Mountain mine — Vermiculite company reports production

★Engineers of the Federal Mining & Smelting Co., of Wallace, Idaho, are making an examination of the Iron Mountain mine, near Superior, Mineral County. The company is considering resumption of operations to mine lead-zinc-silver ore. The property is opened by a shaft and a long crosscut tunnel.

★A fluorspar prospect near Superior, Mont., owned by the Coeur d'Alene Extension Mining Co., has been leased to Jay Bettles, a mining operator from Goldfield and Eureka, Colo. The Fluorspar property was located first in 1944, and since then a large amount

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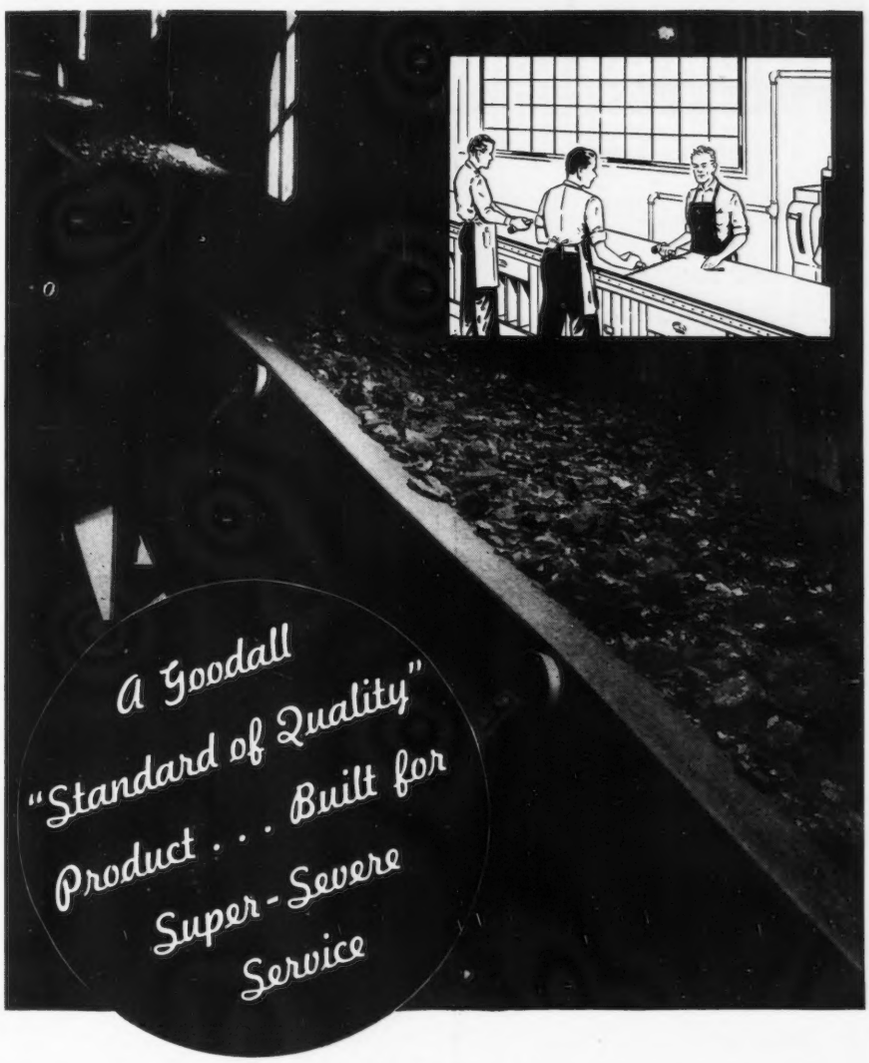

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MONTANA *(Continued)*

of bulldozer prospecting has been accomplished and, according to company officials, has exposed widths of high-grade fluorspar up to 14 ft.

★Silver Gold Lode Mining Co., operating the Marietta mine near Virginia City, Madison County, is prospecting the surface with a bulldozer. P. S. Oscarson, Spokane mining engineer, is directing the work.

★U. S. Grant Mining Co., Virginia City, has drained the water from the old workings of its Easton-Pacific mine, according to Walter H. Myers, president and general manager. The company drove a long crosscut tunnel about 200 ft. below the old workings, and the water was drained through a raise and diamond drill holes driven from the tunnnel.

★Zonolite Co., operating a vermiculite mine and processing plant at Libby, Lincoln County, mined 140,000 tons in 1947, as compared with 20,000 tons in 1940. Last year the company spent $416,000 on its Libby plant and paid a 10c. per share dividend on its 984,112 shares. J. B. Myers is manager of the company, which sells its vermiculite under the trade name, "Zonolite."

WASHINGTON

Talisman mill is operating three shifts —American Chrome and Magnesium announces extensive program

★Alwyn H. Wild of New York, president of American Chrome & Magnesium Industries, Inc., reported in Seattle in September that the company plans open-pit mining of magnesium-chrome deposits in Whatcom and Skagit Counties, to start by April, 1949. He predicted employment of several thousand men at Anacortes, where processing plants are to be erected at an estimated cost of $3 million, and a two-ship dock will be built. Imported and state mined ores will be stockpiled at the company's 51-acre tract there. A 1,250-ton mill is planned at the Twin Sisters deposit.

★George Weissenberger, president of Keokuk Electro-Metals Co., which will operate the plant at Rock Island, has requested Bonneville Power Administration to furnish full time power for one furnace by Nov. 1. A project in the Buckhorn mountains for supplying the iron ore for the company is under development. Mr. Weissenberger said a test run would be made to determine the percentage of ore that can be used in the electro-metals process.

★Columbia Gypsum Products, Inc., has a bulldozer operating on its property in the Spokane valley where it will erect a $50,000 crushing plant, according to Loren G. Brown, president. A portable compressor was shipped from Spokane to the company's mine at Windermere, B. C., where mining of 100,000 tons of pure gypsum for export by way of Vancouver was to start in September.

★Lehigh Portland Cement Co. employed a crew of 40 men at its property at Metaline Falls in September, when a 250-ton, 70-ft. kiln was to be placed. Two 75-ton ball mills had arrived to speed up the company's development program, which calls for doubling capacity.

★The First Thought Mine Corp., owner of the formerly productive First Thought gold mine at Orient, has changed its name to Gold Syndicate Corp., according to Frank Lilly, president, and Hadley Hackney, secretary-treasurer. No operations are planned until the price of gold is increased or mining costs reduced, Lilly said, but aerial surveys are to be made to discover the presence of contacts or faults.

★According to a report from Julius N. Draznin of the NLRB early in September, employees of Permanente Metals Corp. in Tacoma voted 129 to 85 against representation by AFL. The name of the United Steelworkers Union, CIO, with which union the company has a contract, was not on the ballot, because the officers have not filed non-Communist affidavits.

★A three-shift schedule was begun at the Talisman Mining & Leasing Co.'s 150-ton mill, near Laurier, in late September, according to Carl O. Anderson, president. A siding has been installed so that bin concentrates can be sent through chutes directly to cars on the Great Northern Railway. Two raises from the adit tunnel into the old Laurier 1,800 ft. above the mill level are being used for mining, as well as the tunnel face. Two batteries of Fahrenwald cells are operating, producing zinc and lead-copper concentrates at a capacity of 75 tons daily. Fifty tons of zinc concentrates and a car of copper-lead concentrates were ready for shipment in September, Oscar Johnson, supervisor, said, and about 2,000 tons of ore were stockpiled. The ore is carried from the mine to the mill by aerial tramway.

★Permanente Metals Corp. has achieved 12-month sales of $69,605,000 at the aluminum rolling mill at Trentwood and the reduction plants at Mead and Tacoma and a current earning rate of $1 million a month, as of Aug. 31. Because of the aluminum shortage orders were being received at Trentwood in September for delivery next March and April.

★Thirty-five plant foremen and supervisors attended Trentwood's second annual management conference program, which lasted seven weeks. John Meek, works manager, said this program acquaints officials with all phases of aluminum production.

★Pend Oreille Mines & Metals Co. has sunk its new incline shaft at its

Metaline property to 1,200 ft. This will eventually be the main way for transporting the ore to the mill and should be completed by the end of next year. The vacuum furnace tests on zinc refining at the Mead plant are showing excellent results, Jens Jensen, secretary-treasurer, reported.

Reeves MacDonald, Mr. Jensen stated, is ahead of schedule and should reach the production stage before the end of the new year. Only one of the two 500-ton milling units will be started at first. Foundations for three 1,000-ton ore bins have been laid. Foundation for the mill building has been started. Compressor and crusher buildings have been completed. The 2,600-cu. ft. compressor is installed and the 30x30-in. crusher is being installed.

Reserves of 2,500,000 to 3,000,000 tons in the No. 1 orebody average 1.3% lead, 6.3% zinc and 33 oz. of silver to the ton. Two raises (to be 1,000 ft. in height) 24 ft. apart are being driven, one for ore transportation, the other for transportation of men and materials. Development of several other occurrences are planned. When milling starts 120 to 150 men will be needed.

★Metaline Mining & Leasing Co. has resumed operations at its property near Metaline Falls, formerly operated by American Zinc, Lead & Smelting Co. With a production of about 4,000 tons per month, it has been estimated that zinc-lead ore is available for more than a year. Diamond drilling has shown additional supply in the Blue Bucket and Bella May bodies. The company hopes to have its ore milled at the Grandview, which is still strike bound.

★Damage by fire estimated at more than $10,000 was reported from the Grandview Mining Co.'s property at Metaline Falls. The dry house and change room were burned and equipment and clothing belonging to miners on strike were destroyed. Origin of the fire had not been determined early last month.

OREGON

★The State Department of Geology and Mineral Industries has announced a new deposit of ferruginous bauxite 35 miles southeast of Portland. Preliminary field work indicates that occurrences extend for a distance of about one mile along the southwest side of the Clackamas River. Sufficient work had not been done to determine the extent of the deposit or predict physical and chemical characteristics of the ore. At the time of the announcement samples analyzed showed that silica content was probably too high for production of alumina under normal conditions, but it was thought the bauxite might prove to be valuable for other purposes.

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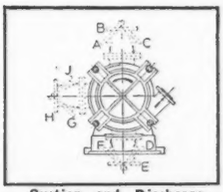

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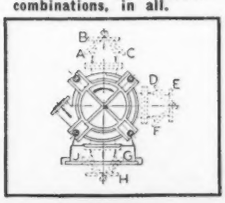

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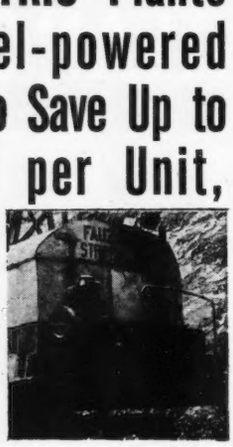

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CALIFORNIA

Federal judge rules in favor of dredging companies—Central Eureka begins milling operations

★Federal Judge Dal M. Lemmon issued a permanent injunction against enforcement of a Butte County ordinance compelling gold dredging companies to replace top soil removed in dredging operations. The Gold Dredging Company of Nevada, the Yuba Consolidated Gold Fields of Maine, and RFC allege that the county ordinance is an invasion of the rights of private property and is confiscatory. The ordinance calls for replacement of the top three feet of soil removed by dredging operations. Judge Lemmon praised the Butte County supervisors for their intent of protecting the argicultural lands, but said:

"A retroactive ordinance which prohibits the conduct of established business which is not a nuisance is an unjustifiable exercise of police power."

Judge Lemmon added that the cost of replacing the required top soil would be so high as to make the mining operations unprofitable and hence effectively deny the firms the right to mine their property. Preliminary injunctions were granted last fall against the ordinance which was enacted in 1947.

★Comprehensive development work continues at the Ancho-Erie gold mine near Washington, Nevada County, and outlook is favorable toward operations on a greatly increased scale in 1949. The mill currently handling ore from development work has been increased to process between 200 and 300 tons of ore a day. Operations are in charge of Fred Anderson, and about 30 men are employed.

★The Gaston gold mine adjoining the Ancho-Erie on the northeast is also operating on a limited scale, with nine men employed. Ore is stoped by shrinkage stoping method from the 1,100-ft. adit. Telford Oates is superintendent.

★Sampling and development work are in progress at the Red Cross mine east of Washington, Nevada County.

★Natomas Co. reports net profit of $488,195 before income tax for the six months ended June 30. This compares with $656,608 for the first half of 1947.

★Central Eureka Mining Co. started milling operations on a trial-run basis on September 22 following completion of underground and surface plant rehabilitation work at the gold properties in Sutter Creek, Amador County, started early in 1946. Results have been most satisfactory and full production at the 200-ton mill is expected shortly. Underground work completed recently includes connection between the Central Eureka and Old Eureka shafts on the 3,500-ft. level, rehabilitation of the Central Eureka shaft to 70 ft. below the 3,500-ft. level, and sinking the north winze to the 3,900-ft. level. C. C. Prior is president of the company, and operations at Sutter Creek are directed by C. W. Plumb, general manager.

★At the Los Angeles County Fair in Pomona, demonstrators of gold milling at the California Centennial Commission's exhibit ran out of gold ore and ordered a load of "just any kind of crushed rock." As the milling demonstration continued, the rock was found to assay $40 in gold to the ton. Probable explanation by fair exhibits manager was that a vein of gold bearing quartz had been crushed with granite from the rock quarry.

★The Big Dyke silver-gold mine 12 miles southwest of Redding, Shasta County, has been reopened by Oregon and Washington interests including R. B. Tupper, M. E. Hawe and R. H. Olson. Original mine development consists of 155-ft. vertical shaft and drifts on the vein on the 100-ft. and 150-ft. levels. Surface work completed includes a road from the adjoining Silver Falls mine, and installation of a compressor and other mine equipment. The old adit has been reopened and some of the stope filling is being treated at the Sunshine flotation mill. Sulphide ore too low in grade to ship 20 years ago when the mine was active can now be treated by selective flotation.

ALASKA

Snowbird company will install mill in Willow Creek area—Mines Dept. installs Geiger counter at Fairbanks

★A mill on Eagle Creek is being reconditioned by E. Beistline and B. Hering to handle their ore from a gold quartz property on Happy Creek, according to a report from Fairbanks.

★Twenty men were mining and prospecting on creeks in the Rampart district, according to Howard G. Wilcox, RFC engineer at Fairbanks. Swanson Brothers and Leo Saarela used two bulldozers on Hunter Creek, while three men were working Swanson's ground nearby. Frank Dinan and Ernest Drexel were on Florida Creek and F. J. Renioski on Grouse Creek. Work on Little Minook Creek was also proceeding with about 10 men.

★Seven U. S. Geological Survey parties were completing their work this fall in the Hecate Island district near Ketchikan, the Pelican City area and the Juneau gold belt. Berners Bay, Craig, Pelican City and Sitkine River areas have had topographical studies made.

★Thomas Mining & Milling Co.'s crew

has run a 900-ft. tunnel on one of three promising veins on the Olive claims, 50 miles west of Valdez. Values in gold, silver and lead were reported.

★Snowbird Mining Co. plans to install a 50 to 75-ton ball mill at its property in the Willow Creek district this winter, according to Chris Poulson, president. A crew of 14 men was doing preliminary work in September.

★B. D. Stewart, Territorial Commissioner of Mines, reported a Geiger counter had been installed in the Fairbanks laboratory by the Department of Mines. It is hoped to have them available at Ketchikan, Anchorage and Juneau offices, to help miners in recognizing and developing uranium and other minerals.

CANADA

Growth of asbestos industry in Quebec continues—Government reports record dividends in B.C. mining

★Mineral output for the first seven months, as reported by the Dominion Bureau of Statistics, has shown marked improvement over the same period a year ago. Copper production was 142,306 tons compared to 130,034; nickel, 81,309 tons compared to 68,133; gold, 1,980,929 oz. compared to 1,775,317. Gold recovered in July, at 296,188 fine oz., reached the highest level since June, 1943. Primary silver in the first seven months amounted to 7,889,758 fine oz. as against 6,607,709 in the same period of 1947. Zinc was ahead of last year at 134,135 tons.

★The pronounced advance in mine employment at the first of July, according to the Dominion Bureau of Statistics, was accompanied by a relatively greater rise in the weekly wages and salaries distributed by employers. The staffs of 661 leading producers of metallic ores, coal and other non-metallic minerals increased by 2% at July 1, while weekly payrolls exceeded by 3.7% the total on June 1. At the beginning of July, $49.44 was the average per week compared with $43.27 at July 1, 1947, the number of hours per week advancing from 44.2 to 45.3. Employment advanced in 12 months by 6.2% and payrolls were up 21.2%. The total number of employees in the mining industry advanced to 83,595, including 59,100 for mining metallic and non-metallic minerals.

QUEBEC

★"A great industrial area comparable with any in the United States," based on large-scale production of high-grade iron ores, was predicted for the lower St. Lawrence River by C. E. Durrell, general manager of the Labrador Mining & Exploration Co.

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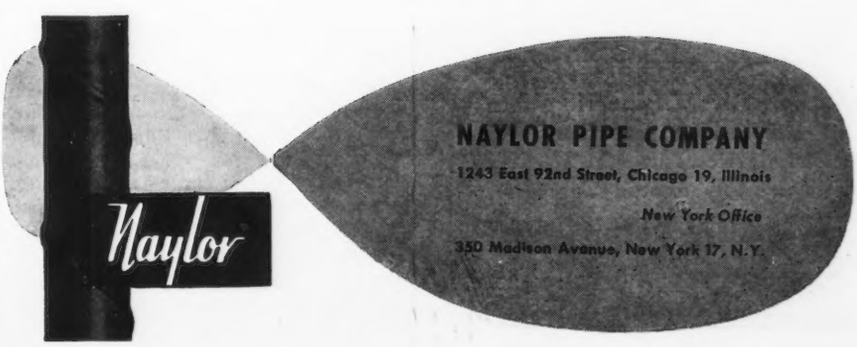

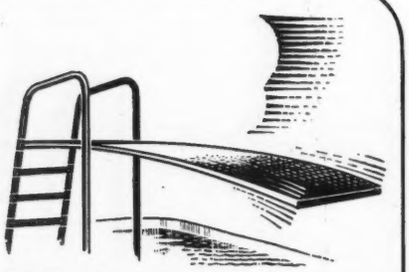

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Quebec *(Continued)*

and the North Shore Exploration Co. Development in the immediate future of ore deposits where very favorable results have been secured from exploratory drilling was announced, with good chances for indicating the existence of more than 300 million tons on completing the work undertaken this year. Total expenditures amount to about $5 million for the field work and drilling preliminary to construction of railroad, mining, and shipping facilities to cost at least $300 million. The project now employs about 200 men, and 12 drill rigs were at work in September testing known orebodies.

★Asbestos production from the Thetford Mines district in 1947 amounted to 661,821 tons valued at $33,005,748 compared with 558,181 tons in 1946 valued at $25,240,562. The first seven months of 1948 showed a new record of 390,028 tons, against 367,511 for the same period last year. Asbestos leads in value all other minerals produced in Quebec. Nine companies engaged in mining this product in 1947 employed 4,885 workers who received $9,165,450 in salaries and wages.

Asbestos mining since 1934 has gradually been changing over to block-caving from open-pit methods. Good ore reserves are reported, although continuous production has been in progress since 1878. Core-drilling below 1,700 ft. has revealed the presence of fiber comparable in quantity and quality with that in the present workings.

★Operating facilities at Noranda Mines have shown steady improvement this year, with production expanded from 55,000 tons per month to better than 75,000 tons since January, as reported by R. V. Porritt, manager. Power consumption at the mine of about 15,000 hp. is not expected to be affected this winter, as happened a year ago, by adverse weather conditions, although a serious power shortage has been threatening mining camps in Ontario.

In October the foundation work was started for the new 500-ft. smelter stack. Tests are being continued in connection with tentative plans for producing iron and elemental sulphur from pyrite, at a daily rate of more than 1,000 tons. It is proposed to treat a pyrite concentrate recovered from the ore in the No. 5 zone, after recovering zinc-copper-gold by flotation.

★M. J. Boylen, president of Anacon Lead Mines, reports the reopening of the Tetreault mine in Portneuf County, with plans for resuming production by the end of the year. The 400-ton mill and all surface and underground equipment have been maintained in good condition since 1944, when production was terminated. P. M. Malouf, manager, estimates reserves at more than 300,000 tons of lead-zinc ore having 2 oz. silver and 0.02 oz. gold per ton. Probable ore is stated to grade 5% combined zinc and lead.

★Consolidated Beattie Gold Mines, Duparquet Township, continues to be handicapped by a shortage of men but has increased output to 1,300 tons a day and expects to gradually increase the rate to 2,000 tons. Efforts to rehabilitate the lower levels, blocked by a great slide of overburden from the open cut several years ago, are expected to be completed in the near future. The "A" zone ore is being salvaged after having been sealed off from the open cut. In the Donchester area 500 tons daily are being mined through the No. 2 shaft.

Development is advancing on the eighth and ninth levels. New ore has been located along the north fault workings and on the lower levels of the main part of the mine. Operators are considering deepening the No. 1 shaft from the fifth level to the ninth to give access to the main north zone, which was accessible through a winze before it was blocked with clay.

ONTARIO

★Kerr-Addison Gold Mines reported production up to 3,000 tons a day at the end of September, after the tune-up period for its second milling unit. In January the third unit is to be in operation, bringing rated capacity of the mill up to 4,200 tons.

★Delnite Mines, controlled by Sylvanite and located in the Porcupine camp, averaged 300 tons a day in the first half of this year but has recently been running 365 tons through the 550-ton mill. Grade of ore averaged $9.42 a ton for the first six months, when net profit was estimated at $43,665 plus the cost-aid bonus of approximately $45,000.

The original orebody of marginal grade has been surpassed by sections opened from a depth of 1,000 ft. down to the 2,875 level, where veins at the east end of the property appear to be extensions of richer sections of ore on the adjoining Aunor orebody.

★Gold production for the first seven months of the year, as reported by the Ontario Department of Mines, amounted to 4,761,459 tons valued at $41,003,986 compared with $39,976,982 in the same period a year ago. The number of workers employed by gold mines was lower in July at 12,796, due to seasonal work on farms. Six mining camps reported a total of 43 producing mines in July.

MANITOBA

★Nickel Lake Mines, Ltd., reports that magnetometer work on the central group of claims has disclosed an interesting anomaly near the south shore of Nickel Lake. A magnetometer survey of the entire property has been recommended, to be followed

by diamond drilling. The company now holds 221 claims.

★San Antonio Gold Mines, Ltd. is milling at 450 tons per day. Values have been encountered on the 17th level, the first results from the new levels, which are to be opened down to the 26th. J. D. Perrin, president, states that operations are proceeding very satisfactorily. The Jeep Gold Mine, Ltd., subsidiary of San Antonio Gold Mines, Ltd., is shipping 30 tons per day to the mill.

★Toba Nickel and Copper Mines, Ltd., reports that an examination of its holdings near Flin Flon has been completed by D. C. McKechnie. The examination disclosed two interesting sections on the property and a contract has been let for diamond drilling.

★Sherritt Gordon Mines, Ltd., intends to carry the shaft on the "A" orebody at the Lynn Lake property to 1,000 ft. before carrying out any lateral exploration or underground drilling. The first level has been established at 92 ft. and the second at 248 ft. On the "EL" orebody a three-compartment shaft has been started but it is intended to stop work on it when collared. This shaft is to go down to 500 ft. following completion of the "A" shaft.

★International Nickel Company of Canada, Ltd., has stopped exploration work in the Lynn Lake area. Diamond drilling was carried out on the 100-claim group east of Sherritt Gordon's main Lynn Lake group. Considerable surface work was done to check anomalies outlined by airborne magnetometer. No nickel or copper values are reported.

BRITISH COLUMBIA

★The mining industry in British Columbia paid record yearly total dividends in 1947, according to a government annual report released in October. Consolidated Mining & Smelting Co. paid $26,207,219 of the $27,940,213 dividends. The best prior year was 1941 with a total of $16,598,110. Britannia paid $720,438 this year; Crows Nest Pass Coal, $186,354; Granby Cons. Mining, Smelting & Power Co., $270,129; Highland-Bell, $78,293; Island Mountain Mines Co., $74,057; Kelowna Exploration (Nickel Plate), $180,000; others, $213,713.

★E. J. Gleason, manager, Base Metals Mining Corp., Ltd., reported that following recent development drilling, a high grade lead-ore on the extension of 200-C stope in the Monarch claim is available for mining. Further work is proceeding to determine the extent of the orebody. Effect of this ore is reflected in the mill heads, currently averaging from 6 to 8% lead against the previous 1 to 2%.

In Kicking Horse claim, a hole recently drilled in search of a possible extension of No. 1 stope, cut 25 ft. of

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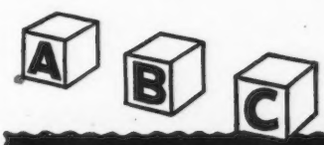

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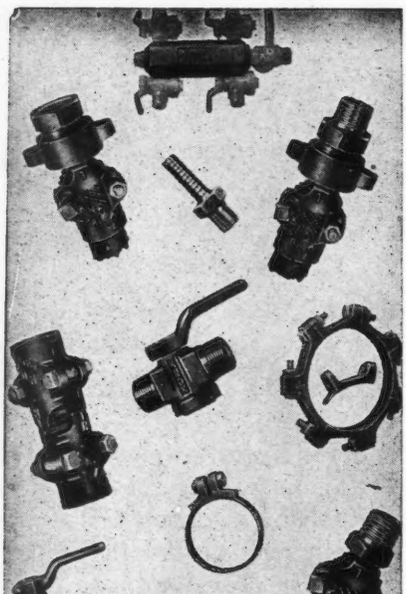

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British Columbia *(Continued)*

ore averaging 11.4% zinc and 0.80% lead.

★Hedley Monarch gold mine has commenced shipments of ore to Tacoma Smelter under a new contract with Donald Cameron and associates, currently operating the property. An ore bin has been constructed at the mine, and a new ramp and ore bin at Keremos for handling shipments, expected to average two cars weekly. Contractors will receive 90% of net smelter returns on all ore returning under $40 per ton and 85% on ore over $40. The company will still qualify for the federal gold bonus.

★Western Exploration Co., Ltd. plans to expand operations at its Silverton property, silver-lead-zinc producer, in the Slocan area and to bring the mill up to its full 250-ton capacity. Additional machinery to cost about $30,000 has been ordered to step up underground work at all three mines in the immediate area of the mill at Silverton, namely, the Enterprise, the Standard, and the Mammoth.

★Sullivan mine has completed a two-mile tunnel allowing ore cars to load in the mine and proceed directly to the Sullivan concentrator, thus eliminating an expensive trans-shipping procedure by railway through Kimberley. The tunnel was built by Northern Construction Co. and is a major part of a $2,500,000 low-level haulage project of Consolidated Mining & Smelting Co.

★Utica Mines (1937), Ltd. reports high-grade values in silver, lead and zinc in opening of ore on the east vein of the new No. 5 level of its Kootenay property in the Ainsworth division. Ore shows values exceeding $100 per ton and milling grade running better than $30 a ton. The west vein has been reached on the No. 7 level and initial work indicates good ore.

★Pinebrayle Gold Mines, Ltd. plans to continue the Ogden tunnel at the company's Bridge River property with a hand-steel during the fall and winter. After another 900 ft. the tunnel will reach the area where a favorable diamond drill intersection was made.

★Island Mountain Mines Co., Ltd., its crew working without a contract, reports an improved labor situation, and production nearing the full 150 tons daily. Production for August was 3,682 tons milled, for recovery of 1,370.31 fine oz. gold, valued at $47,961.

★Privateer Mine, Ltd., with operations at Zeballos on Vancouver Island, was scheduled to close down in October as soon as broken ore was milled. The shutdown brings to eight the number of operating gold quartz mines in B. C. Hedley Mascot already has announced it will consider a close-down if a review of costs later this year indicates the move.

Already closed earlier this year were Silbak-Premier and Sheep Creek gold operations. Still operating at a profit are Bralorne, Island Mountain, Kelowna Exploration and Taku River. Pioneer and Cariboo Gold Quartz continue to operate, though on a reduced basis, and primarily in development work.

★Torbrit Silver Mines, Portland Canal district, expects to postpone milling until December, because of a shortage of labor.

★The discovery of antimony in commercial quantities on the slopes of Mount Truax, five miles southeast of Goldbridge, B. C., in the Bridge River area, is giving fresh impetus to British Columbia mining development already enlivened by recent discoveries of uranium in the same area. One veteran prospector, Sandy Simonds, reported ore assaying 54% antimony.

★Atkinson Dredging Co., Ltd., operating a dredge in old diggings in the Princeton district, reports about 30% of its values in platinum. The firm is shipping gold ranging from $5,000 to $10,000 every second week.

★Brooklyn-Stemwinder Gold Mines, Ltd. is operating its recently purchased milling plant at Greenwood. Mill capacity is rated at from 60 to 80 tons daily, but the company is considering plans to increase output to 100 tons. Decision to start milling operations followed closely reopening of the old workings and their examination by Dr. Victor Dolmage, consulting geologist. Ore will be taken from the old workings and from a new ore section recently opened.

★Silbak-Premier Mines, Ltd., which closed down its gold operation in the Portland Canal area in July following a pay dispute with the union, has a crew examining a zinc-copper prospect, Danzig mine, located in the Clayoquot area of Vancouver Island. Previous work on the property was centered on narrow gold veins.

★After half a century of idleness, Pilot Bay smelter in the Nelson area has shipped 200 tons of lead ore to the Trail smelter. Among the new shippers to the Trail plant were Doherty of Retallack, Sun of 49 Creek, Society Girl of Meyie, Jackson and Rambler Cariboo of New Denver, and Galena Farm of Silverton.

★Dr. W. H. Patmore, geologist, reports a new silver-lead-zinc discovery in the Whitesail-Eutsuk Lake area. Acting for a Vancouver group, he has staked claims covering three occurrences.

★Uranium deposits, discovered during the summer in the Gun Lake-Goldbridge area of Bridge River district, have commercial possibilities, according to a report of Dr. J. S. Stevenson of the B. C. mines department. Dr. Stevenson reported that the find by Ernest Johnson on the abandoned Gem property has been discovered so

far to contain an indicated 1,000 tons of ore averaging 0.2%, or about 4 lbs. per ton uranium oxide.

Deputy Mines Minister, Dr. J. F. Walker, stated two points still to be decided are whether there is enough uranium to start mining on a commercial basis and whether it can be treated to recover the uranium, since the ore is in a complex form.

★The Government of British Columbia has placed reservations on all minerals in large sections of the Omineca and Skeena mining divisions to prevent nuisance staking as a possible obstruction to power development in the Whitesail Lake area. Serious consideration is being given to large-scale hydroelectric development to service a proposed new aluminum plant in this or some other part of the B. C. coast by Aluminum Company of Canada, Ltd. The Deputy Minister of Mines states that it is not expected that the reservation will affect prospecting as, for the most part, only low-lying ground is covered.

★With the liquidation of Salmon Gold Mines, Morris Summit Gold Mines has officially taken over the ownership and control of the former company's Portland Canal district gold prospect. Results obtained in the underground program of the past year were so good that the management is considering milling. The company's plans for next year call for construction of a road to the mine, completion of a hydroelectric power line and completion of ore development in preparation for milling.

★The new 75-ton mill at Hazelton, property of Silver Standard Mines, Ltd., commenced steady three-shift operations September 18. Recent development has added materially to the previously reported 53,000 tons of gold-silver-lead-zinc ore. A new ore shoot has been established in 1304 north drift and No. 5 vein has been intersected by diamond drill at 160 ft. below the 1,500-ft. level.

★The road to Bralorne's Yalakom property in the Shulaps Mountains has been rebuilt by the Department of Public Works and is now open for hauling supplies and equipment. Bralorne management, however, does not expect to resume development at Yalakom until next spring. When work is begun, priority will be given to diamond drilling to test veins found in previous underground work.

SASKATCHEWAN

★W. J. Bichan, Mineral Resources Director, has announced discovery of an important copper-nickel deposit in the Grassy Lake area, 15 miles west of Flin Flon. Further nickel finds have been reported in the area between Beaver Lake and Birch Lake. Staking is at an all-time high and total claims recorded for 1948 are expected to surpass the boom year of 1936 caused by the Athabaska rush.

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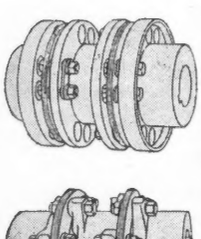

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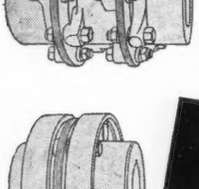

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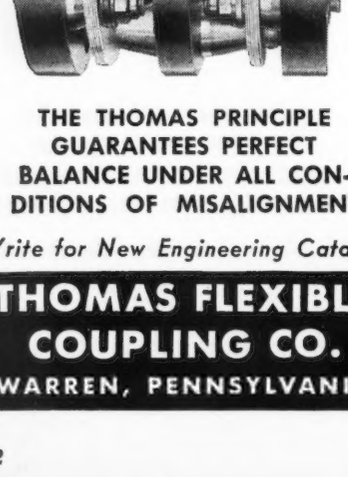

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MEXICO

Mining industry protests new tax on exports—Nine-weeks strike ends at Monterrey Iron & Steel Works

★The Mexican Mining Association has asked the Ministry of Finance to exempt mining products from the new 15% ad valorem tax on exports. Mining and business generally were disturbed by the announcement of the Ministry of Finance that the worth of the dollar for fiscal purposes—chiefly payment of federal taxes in foreign monies—would increase from 6.50 to 6.85 pesos.

★The nine-weeks' strike against the Monterrey Iron and Steel Works, Monterrey, Nuevo Leon, has been settled. It was officially estimated that this strike cost Mexican industry 32,000,000 pesos (about $4,500,000) in the form of delayed deliveries of iron-steel products. The settlement allows an 18% wage increase and other cash benefits that swell the company's annual overhead by 4,000,000 pesos.

★Two gold-silver-lead veins have been discovered in the Paricutin-Mineral del Monte district, near Pachuca, Hidalgo, say reports from that silver mining center. An important iron deposit found recently at Zacualtipan was announced by the Ministry of National Economy.

★In Oaxaca 42 mining claims were filed in September, according to the Ministry of National Economy, most of them in the Mixteca, San Jeronimo Taviche and Magdalena Teitipac regions.

★The export tax on gold in any form, except coin, has been increased to 45 centavos (6½c.), plus 30%, per net gram.

★A gold and silver deposit is being worked near Santa Ana, Sonora, by the Heler Poy Jue Mines, Inc. The enterprise, under the supervision of Clarence W. Payo, vice president, is operating a 20-ton mill.

★Cia. Minera Santa Lucia, S.A., has announced satisfactory operation of a 25-ton jig and flotation plant at its properties near Mascota, Jalisco, where gold, silver, lead and zinc are produced.

BOLIVIA

★Regarding the reported campaign of a strongly nationalist group against Patiño Mines & Enterprises Consolidated, as well as the Aramayo and Hochschild mines (E&MJ, Aug., p. 142), the New York office of the Patiño company writes:

"The closing of the paper, 'El Diario', which backed the campaign, was blamed on Patiño Mines, on the hearsay that one of the largest stockholders of the paper is an employee of the corporation.

"The so-called campaign employed the same tactics, trying to get personal notoriety by sensational, irresponsible articles, which failed, in this case, to impress the public. The Patiño interests had nothing to do with the closing of 'El Diario' for several days. This was entirely a private issue and principally due to economic difficulties and to a strike of workers demanding wage increases."

CHILE

Company plans to close mines at Tocopilla—Anaconda to investigate copper deposit near Iquique

★The bill which would permit miners to export their gold to foreign markets, obtaining about $47 per oz., and use the resulting dollar-drafts for importing of merchantable goods including luxuries, had not become law early in October. The bill passed Congress and it was expected that the President would sign it. However, a subsequent announcement from the President's office declared that because of fluctuations in the price of gold auctioned in the stock exchanges and that of the free dollar, which took place after the bill was approved by Congress and which caused considerable alarm, "it has been decided that it is necessary to introduce certain alterations in the bill that will prevent speculative rises in the price of gold. . . . However, the object of the law tending to help the gold miners will be maintained."

★Compañia Mineral de Tocopilla, a Chilean-owned copper mining enterprise, with mines at Tocopilla and Ovalle, has petitioned the Government for permission to close down its Tocopilla division because of high costs and rising wages. The Ovalle mine and 700-ton mill have been closed for a number of years because of exhaustion of known orebodies, but exploration work here has continued.

★Anaconda Copper Mining Co., through its exploratory subsidiary in Chile, expects to investigate the Sagasca copper deposit 45 miles northeast of the port of Iquique. This is an oxidized copper property well known to Chilean engineers, where reserves are estimated at 6 million tons of ore. Water for leaching can be obtained from the Yabricoya Canyon.

★Señor Santa Cruz, representing Chile in the UN and in the Economic Committee for Latin America, denied recently at Geneva the contention by a Soviet representative that Chile's

economy is dominated by the large copper corporations operating in Chile. He stated that it would have been impossible for Chile, financially, to carry out the development undertaken by foreign companies.

ARGENTINA

Government pushes exploration and development program—Plans copper smelter for Tucuman

★Argentina's military factory system, Dirección General de Fabricaciones Militares, has embarked upon a program to explore and develop the mineral resources of the Argentine. Government military authorities realize the great handicap of an army which must import nearly all of its iron, copper, coal and almost everything except lead. It is now the policy of the Government to put all needed men and money into an effort to locate and develop new mines of all types. If only low-grade areas are found, pilot plants will be installed to develop processes for using such low-grade ore.

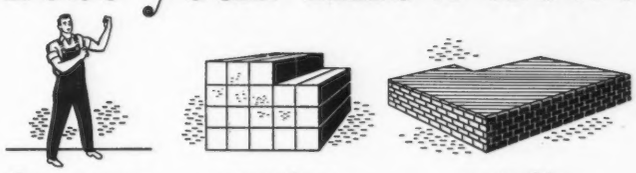
A commission for Patagonia will send working parties to the southern Andes section of Argentina, in the direction of Cape Horn. These parties are being equipped with airplanes carrying magnetometers expected to disclose mineral deposits over large and generally inaccessible territory. Ground parties with permanent camps and fleets of trucks will complement the air exploration. A complete geophysical survey will be made to furnish material for further study in Buenos Aires.

★Hubert O. Woods, formerly superintendent of the Hayden smelter of American Smelting and Refining Co., is now in Argentina to supervise design and construction of a copper smelter for the Fabricaciones Militares. The smelter, in the design state at present, will be comparatively small, expected to have an annual capacity of 6,000 tons. It is primarily for training of Argentine personnel in this work, as known copper deposits in Argentina cannot provide even this amount of ore.

The new smelter will be built in Tucuman, in northern Argentina, where rail lines can be close to Chilean and Bolivian ore supplies and at the same time have access to the hydroelectric power to be developed in that section of Argentina.

★Another smelter slated for erection in Argentina is the 300,000-ton capacity San Nicolas plant which will be put up by Armco in the Buenos Aires area, also a Government undertaking. Here it is hoped to use considerable Argentine ore from the Jujuy district in northern Argentina, together with imported ore.

Test your know how:



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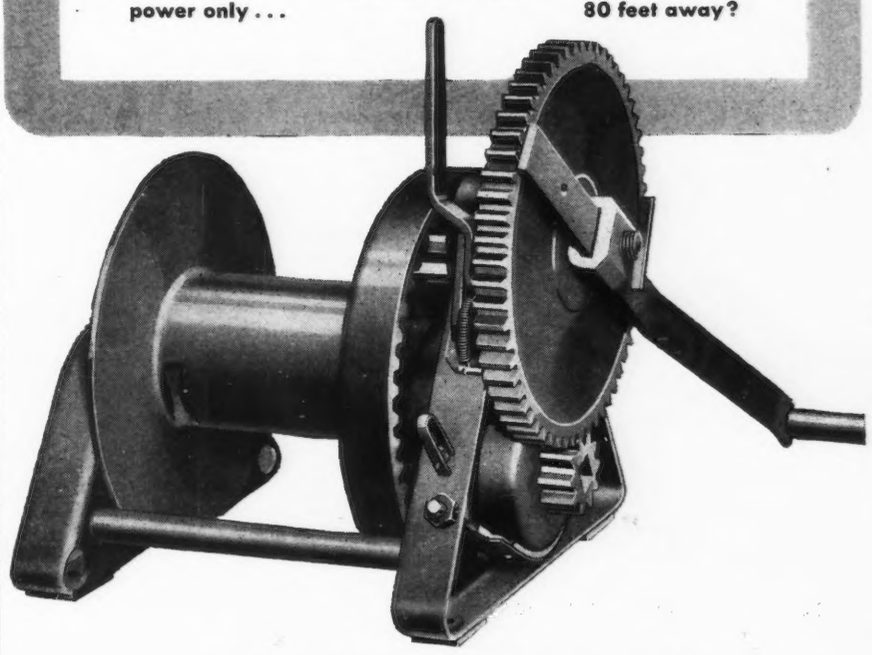

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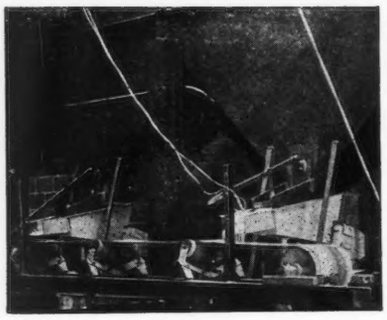

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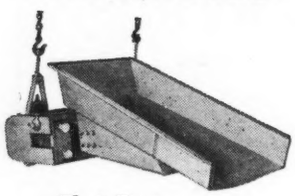
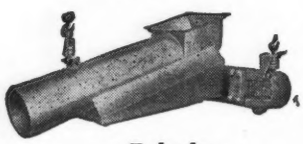


Flat Pan



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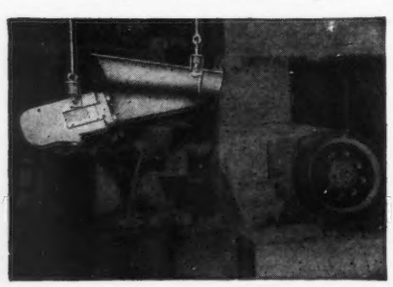

PHILIPPINES

Bureau estimates mineral production for half-year—Recovery is good at Lepanto Consolidated mill

★Mineral production of the Philippines for the first six months of 1948 is estimated by the Philippine Bureau of Mines as follows:

		(Value)
Gold	97,632 oz.	$3,395,782
Silver	62,856 oz.	44,328
Manganese Ore	6,158 l.t.	100,836
Chromite Ore, Refractory grade	124,699 l.t.	1,184,590
Chromite Ore, Metallurgical grade	5,036 l.t.	88,124
Coal	44,480 tons	501,661
Cement	399,711 bbl.	2,398,270
Misc. Mine Products		148,352
		$7,861,943

★Gold mines have had difficulty in obtaining premium prices for their bullion in the Manila open market since the currency reform in China, where heavy penalties have been placed upon illicit transactions. The current price for bullion has dropped several dollars, and is now nominally about $45 per ounce. Because this condition is believed to be temporary, the producers are withholding their bullion from sale for the present.

★Benguet-Balatoc production again headed the list in August, with output valued at $267,500 at the statutory price, from milling of 33,948 tons. Mill heads were slightly higher grade than in July. Mill capacity is to be increased by 600 tons to 1,800 tons daily.

★Atok-Big Wedge followed Benguet in value of production, with $202,500 from 13,503 tons milled. Work is nearly completed on a refinery that will permit bullion of near 1,000 fine to be poured. August production at Mindanao Mother Lode was $94,516 from 5,800 tons milled. Surigao Consolidated stepped up production in August to $73,115 from 7,197 tons milled. This represented an increase of 1,200 tons above the July milling rate. Production is coming from the 200, 300 and 400-ft. levels. A retreatment plant for table concentrates has resulted in recovering about 90% of the production in bullion form, with only 10% as flotation concentrates to be sent to the smelter. This permits a considerable saving in marketing costs as well as increasing mill capacity.

★Lepanto Consolidated milled about 230 tons daily in August, or half the rated mill capacity. Mill performance is reported very satisfactory with 92% recovery of the copper and 81% of the gold, both substantially higher than prewar. Ratio of concentration is about 6.5:1 and concentrates are 30% copper.

★The Bureau of Mines has undertaken a survey for pyrite and phos-

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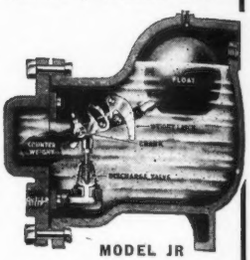

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phate deposits, with $100,000 appropriated for the purpose. The Bureau will also sample and umpire shipments of ores to foreign purchasers.

★The Philippine Iron Mines were granted permission by the Philippine Government to ship 200,000 tons of iron ore annually to Japan, provided the iron, after being smelted and fabricated, was returned to the Philippines for sale locally. Other conditions imposed were so difficult to assure, it is reported, that the agreement failed to meet approval of SCAP (Supreme Command for the Allied Powers). In the meantime Japan is obtaining iron ore from British Columbia and South America for its blast furnaces.

AFRICA

Southern Rhodesia cancels gold subsidy—Good results from resettlement scheme with ex-service men

★Southern Rhodesia decided, in early October, to cancel the subsidy to gold producers, following discussion between Rhodesian experts and officials of the International Monetary Fund.

★The South African government will not nationalize the gold mines, but will make an exhaustive inquiry with a view to framing a long-term policy of controlled development, according to the Minister of Economic Affairs and Mines, Mr. E. H. Louw. There must be a central idea in the further exploitation of the Union's gold resources, with due regard to the fact that the industry forms part and parcel of the Union's economic structure.

Mr. Louw stated that the Government was aware of the need to prolong the life of the low-grade mines and that it hoped the Atomic Energy Bill Parliament passed would play some part in solving this problem. The Atomic Energy Bill gives the state full control over the exploitation and working of uranium and the generation of atomic energy. It also gives the State a monopoly of the exploitation and treatment of any proclaimed radio-active mineral.

★Shaft sinking at the new Doornfontein gold mine, on the West Rand, is likely to be slow and costly, according to the company's chairman, Mr. S. R. Fleischer. To reach the relatively deep reefs, the shafts will have to pass through water-laden dolomite, and there will be continuous cementation. Sub-outcrops of the Main Reef and Carbon Leader were expected to occur at the base of the dolomite, and the Black Reef, at depths varying between 2,700 and 3,800 ft.

★Union Platinum Mining Co., Ltd., situated on the farm Zwartklip, west of Northam, is rapidly being brought to production. The company holds

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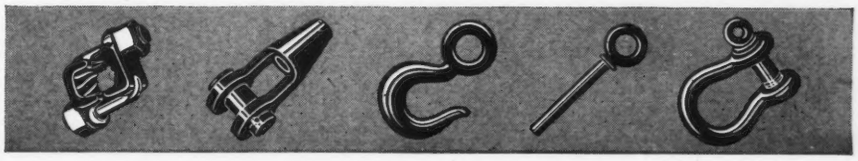
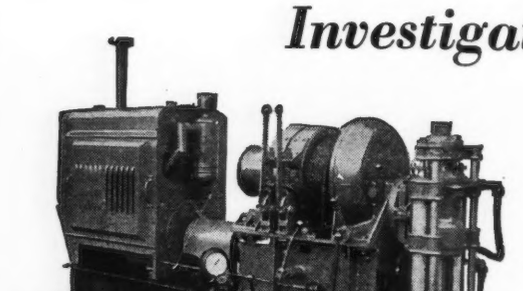


Investigate



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Africa *(Continued)*

about 550 claims of which 546 are considered to be underlain by platinum-bearing reef. The platinum reef has been proved to persist across a length of 9,600 ft.

It is expected that the mine will begin production on a scale of 150 tons daily by November or December. Production will be stepped up to 500 tons a day early next year, and later to 1,000 tons a day.

★Comparative results of operations by Glynn's Lydenburg, Ltd. during the past two quarters are as follows: (Cost per ton for first quarter includes 3s. 9d. per ton milled; for second quarter, 3s. 8d.)

	Quarter Ended April 30	July 31
Tons milled	30,900	31,200
Costs per ton	40s. 5d.	39s. 10d.
Total profit	£8,325	£7,679
Taxation	£ 722	£ 272
Footage sampled	1,840	1,310
Footage payable	190	300
Average value (dwt.)	25.9	18.7
Average width (in.)	11.3	16.5

The ore reserve re-estimated on July 31, amounted to 192,000 tons averaging 6.5 dwt. over a width of 18.4 in.

★With 26 working days in August against 27 in July, the monthly statement of gold mining output, issued by the Chamber of Mines, shows a decrease of 20,998 oz. to a total of 965,252 oz. The value was £8,325,299, a decline of £181,107. Witwatersrand output was 938,302 oz., a decrease of 28,081, the value being £8,092,855 against £8,335,053 in July. In the outside districts, the August output increased by 7,083 oz. to 26,950, the value being £61,091 higher at £232,444.

Milling amounted to 4,632,000 tons, compared with 4,719,300 tons in July. From January to August this year the mines milled 37,198,200 tons which yielded 7,773,151 oz. fine gold at a total working cost of £48,651,175. The estimated working profit was £15,935,863, equivalent to a profit of 8s. 7d. a ton milled.

★The Government mining settlement scheme in Southern Rhodesia for the reopening of dormant and derelict mines by ex-service men is succeeding, according to the Geological Survey of Southern Rhodesia for 1947. The Government grants loans to cover the costs, including the miner's salary, of reopening the property up to the time that production has repaid the portion of the loan which is not secured by movable assets. The miner then takes over the mine with a hire-purchase agreement on the plant.

★Southern Rhodesia's mineral output, despite the declining gold production, was valued at £742,951 in July—the highest total value ever recorded in any one month in the Colony's history. In addition, the output for the first seven months of this year was about 17% more valuable than the output for the same period last year. This

increase was due to an expansion in base mineral production.

★Tsumeb Corp., operating in the northern part of Southwest Africa, produced 18,875 tons of concentrates and export ore during the first three months of 1948 instead of 24,340 tons as reported last month. The total tonnage included 1,376 tons of lead concentrates; 623 tons of zinc concentrates; 12,550 tons from the sorting and jigging plant, of which approximately 40% was sorted ore; and 4,326 tons of export ore.

★A sudden fall in the delivery of coal to the Northern Rhodesia copper mines has become the subject of inquiry by the Government of that state. Though 39,000 tons were received in July, only 31,000 tons were loaded at Wankie during August.

In consequence Nkana was forced to close down for four days, Nchanga for one day and Rhokana mine and mill for five days in September. All mines were working on a restricted basis and the prospects of a higher delivery were small in October.

INDIA

Indian Copper company to install new rolling mill and generator—Survey reports ilmenite on Ceylon

★Sir J. C. Ghosh, Indian director-general of industries and supply, has predicted that the Central Provinces can become a great aluminum producing area if properly developed.

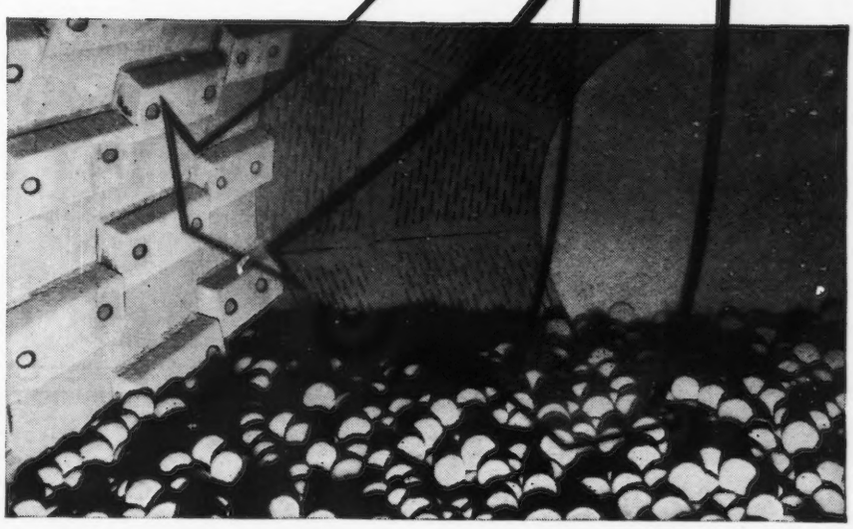
The 5,000-ton plant of the National Aluminum Co. to be erected near Nagpur, he said, will be able to meet the prices of aluminum imports. When and if the proposed 600,000-kw. Wainganga hydroelectric project is built it will be possible to raise the factory's output to 50,000 long tons annually, since the area's bauxite deposits seem virtually inexhaustible.

★The Indian Copper Corp., Ltd., has revealed a profit for the year 1947 of $2,413,000 compared with $1,334,000 in 1946. Development results have been disappointing, especially in the Badia mine. Because of lack of shaft sinking and winzing during the war, development at depth has not been undertaken.

All parts for a new four-high cold rolling mill and 4,400-kw. generator are on hand at the company's refinery near Ghatsila, Bihar, and installation is expected to be completed by the end of this year.

★The Dominion of Ceylon has before it a survey which reports that large crystals and rolled masses of ilmenite are found in all parts of the island, and that there are four "black sand" deposits, the largest of which extends for four miles along the beach near Trincomalee.

Better grinding starts here



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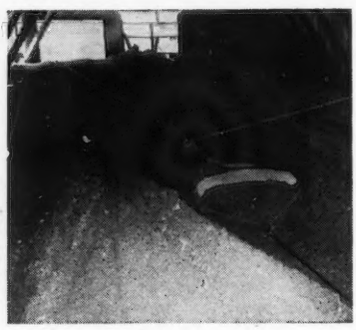
UNITED STATES STEEL

This picture shows how a Sauerman scraper machine with high tail tower handles a 25,000-ton stockpile of phosphate rock at Florida drying plant.



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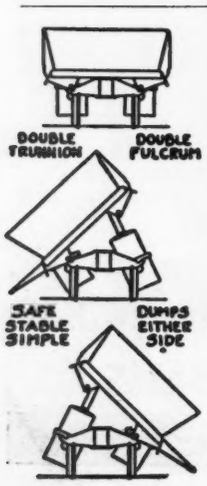

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AUSTRALIA

New Company will work properties in Yilgarn district—Commission plans aluminum works in Tasmania

★The Australian Aluminum Production Commission is proceeding with plans for the establishment of the industry in Australia. A site for the works has been selected near Launceston, in Tasmania, where electric power is available from the Government's hydroelectric plants. Ore will be drawn from New South Wales, Tasmania and Victoria. The most extensive desposits of bauxite occur in the first-named State, and are located in the Inverell district. These deposits are considered sufficient to supply the full requirements of the plant, which is to have a capacity of 10,000 tons of ingot aluminum per year, for a period of 60 years.

WESTERN AUSTRALIA

★Paringa Mining and Exploration Co., Ltd., holding leases on the Kalgoorlie goldfield covering 359 acres, has opened only a small portion of the area, chiefly the Paringa mine. In the last financial year the company milled 107,195 long tons of ore of an average grade of 5.24 dwt. gold per ton. Ore reserves are estimated at 195,646 long tons assaying 5.75 dwt. per ton, made up of 120,666 tons of proved ore and 74,980 tons broken in stopes.

An important discovery is of an ore channel near the east boundary, where borings have shown high values. The discovery is being opened up between the 640-ft. and 800-ft. levels; the length in September was 120 ft. and width 4 to 10 ft.; values from 8.31 dwt. to 10.4 dwt. per ton.

★Following the recent formation of New Coolgardie Gold Mines, N. L., Western Mining Corp. has established another operating company, Great Western Consolidated, N. L. The new company will amalgamate a number of properties in the Yilgarn district and work them as one unit. The project is the largest yet undertaken by Western Mining Corp. A beginning has also been made by this concern in the geophysical surveying of the Salt Lakes project to the southeast of Kalgoorlie, covering three prospecting reserves of 100 square miles each.

VICTORIA

★In Victoria, the State Government will distribute £17,500, on a £1 for £1 basis, among five Bendigo gold mining companies to stimulate production. The companies are Deborah Gold Mines, N.L., Central Nell Gwynne Gold Mining Co., N.L., North Virginia Gold Mining Co., N.L., Nell

Gwynne Reef, N.L. and South Deborah Gold Mines, N.L.

★Morning Star (G.M.A.) Mines, N.L., reports the discovery of a new dyke formation south of that previously known. The No. 15 level of the Achilles floor and the No. 17 level of the Stirling floor will be driven southward to test the continuation of the veins into these dykes. In the meantime, the program of shaft sinking to test the reefs below No. 17 level will be deferred. To attract and keep mine workers, Morning Star has built a second set of ten homesteads at the mine.

TASMANIA

★During its first nine months of operation King Island Scheelite (1947), Ltd., produced £195,112 worth of the tungsten mineral.

★A spokesman of the Electrolytic Zinc Co., Ltd., at Risdon stated that the consistent below-capacity production of this refinery is not a matter of profit policy, but is due to difficulty in finding enough shipping space to dispatch the accumulated raw product from the mainland roasters.

A new flash roaster and a new contact-type sulphuric acid plant are almost ready to go into operation. Work will start soon on the projected ammonium sulphate plant.

QUEENSLAND

★Titanium Zirconium Industries Pty., Ltd., a new subsidiary of Broken Hill Corp., Ltd., has been incorporated in Brisbane with a capital stock of £250,000. The company proposes to work in zircon-rutile-ilmenite beach sands at Moreton Bay and Stradbroke Island, South Queensland, a radioactive thorium mineral, for stockpiling by the government. The subsidiary will spend £75,000 in prospecting, erecting plant and mining operations.

★Gold production in the State for the first half of 1948 was 26,268 oz., a decrease of 9,818 oz. from the first six months of 1947.

NEW GUINEA

★For the year ended May 31, 1948, Bulolo Gold Dredging, Ltd., recovered 75,094 fine oz. of gold, valued at £A750,000, from the treatment of 7,855,000 cu. yd. of alluvium. Four of the dredges were in operation early in the financial year, the fifth commenced work in January, and the sixth in April. During June, the six dredges dug 893,100 cu. yd. of ground, and recovered 7,678 fine oz. of gold, which is the best monthly yield for some time, representing an improvement in both yardage and the grade of the material treated. Since the end of the financial year, the reconditioning of the seventh dredge has been completed and this unit has commenced work. Work is proceeding on the eighth dredge.

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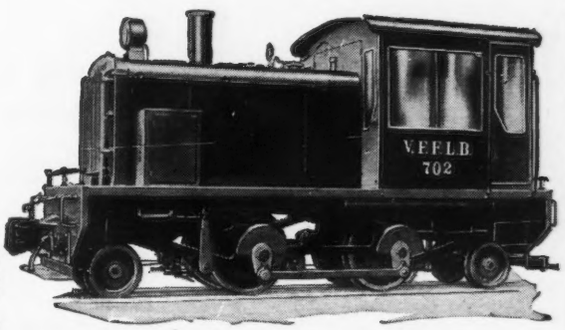

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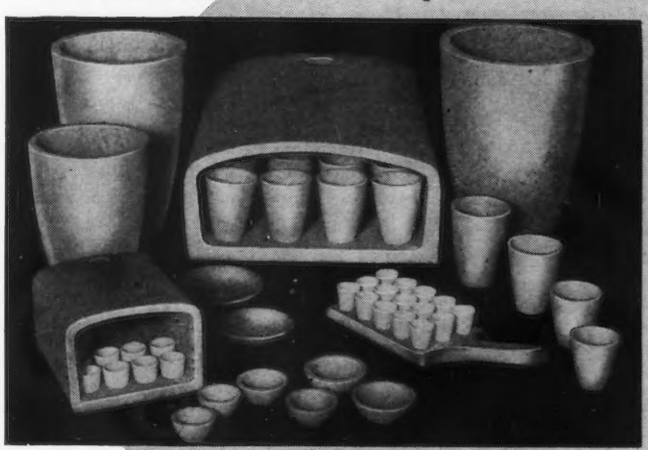

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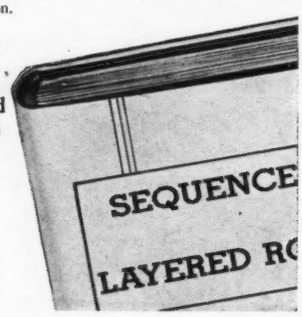

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News of the Industry (*Continued*)

tion of the Oregon State Department of Geology and Mineral Industries, contends that it is still uncertain how a claim owner is to be sure that his claim is or is not on the revested or grant lands. It further maintains that "the provision which requires filing with the District United States Land Office is unnecessary, is contrary to the spirit of the U. S. mining laws, and is another obstacle thrown in the way of the legitimate prospector as distinguished from the land speculator."

Mines Bureau Estimates Japanese Lead Reserves

Japanese lead ore reserves, known and probable, are estimated to contain approximately 268,000 tons of metallic lead, the Bureau of Mines reports. Most of the lead-zinc mines are along the full length of Honshu, the main Japanese island, with a few in southwestern Hokkaido, northern Kyushu and in Tsushima.

USBM Finds Organism in Mine Waters

An organism, so small that it can be seen only with an electron microscope, has been discovered in acid mine waters by Bureau of Mines scientists. The organism is believed to be an important factor in causing the stream-polluting and corrosive effects of such waters.

U.S. Third in Importers of Swedish Iron Ore

Though earlier reports predicted the United States might receive as much as 3,000,000 tons of iron ore from Sweden this year, latest figures indicate 1,500,000 tons to be a more accurate estimate. The latter amount represents 15% of Sweden's exports of iron ore for 1948 and keeps the U. S. third on the list of importers of the high-grade Swedish ore. Great Britain, first on the list, received 2,198,000 during the first eight months of the year, while this country imported 978,000. Belgium - Luxembourg held second place. Bizonal Germany received 875,000 tons.

Geologists Meet for International Congress

The International Geological Congress opened its 18th session on August 25 in London, with 1,746 delegates attending. The congress was divided into 15 sections for discussion of the more than 200 papers submitted. Attention of mining engineers was focused on the section covering "Geology, Paragenesis and Reserves of the Ores of Lead and Zinc."

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Personal News (*Continued*)

his popularity in the state are additional evidence of his stature. He was an able administrator who lived a long useful life, leaving behind him many friends who will always revere his memory.

WILLIAM WRAITH.

An Appreciation of W. A. Julian

W. A. (Bill) Julian, a mining man well known in the Southwest and Mexico, passed away at his home in El Paso on Sept. 17, after a long illness. He was 74.

Julian was born in San Rafael, Calif. At an early age he moved to El Paso and graduated with the third class of El Paso's first high school. He then went to Notre Dame University. After leaving school Bill went to Pachuca, Mexico, to learn mining the hard way by starting as a mucker. Later he moved to the Cananea Consolidated Copper Co. at Cananea, Sonora, where he held various positions. During World War I, he was appointed American vice consul in Cananea.

Julian moved to Douglas, Ariz., and in 1927 accepted a position with the Mine & Smelter Supply Co. as their representative in Mexico, which position he held until his death.

Bill was known throughout the Southwest and Mexico and was loved by all who knew him.

R. G. PONSFORD.